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ABSTRACT

This report uses data from the National Education Longitudinal Study of 1988 to examine 1992 high school graduates' access to postsecondary education in 1994, 2 years after high school graduation. An overview of the postsecondary enrollment rates of graduates by family income, race/ethnicity, and parental levels of education is followed by an analysis of the factors associated with the relatively low four-year college enrollment rates of Hispanic, black, and low-income students. The findings include: (1) the differences by income and race/ethnicity in the four-year enrollment rates of college-qualified high school graduates are eliminated among those students who have taken college entrance examinations and completed an admission application; (2) high school graduates with low-income parents are able to attend four-year colleges at the same rates as students from middle-income families, if the low income students follow the usual requirements for consideration and admission; (3) college-qualified low-income students, once accepted to four-year colleges, are as likely to enroll as middle- and high-income students; and (4) barriers to a four-year college education for low-income high school graduates appear to include low educational expectations and poor academic preparation. Appendix A is comprised of a glossary and Appendix B is comprised of technical notes and methodology. (JLS)

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Statistical Analysis Report October 1997

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Access to Postsecondary Education for the 1992 High School Graduates

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Access to Postsecondary Education for the 1992 High School Graduates

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HIGHLIGHTS

This report uses data from the National Education Longitudinal Study of 1988 (NELS:88) to examine access to postsecondary education of 1992 high school graduates by 1994, two years after high school graduation. After an overview of the postsecondary enrollment rates of the 1992 high school graduates by family income, race–ethnicity, and parental levels of education, the report focuses on the factors associated with the relatively low four-year college enrollment rates of Hispanic, black, and low-income high school graduates. It examines college costs and financial aid, the educational expectations and immediate college plans of the high school graduates, and their academic preparation as measured by a four-year "college qualification index" developed for this study. The index is used to identify those who would have met the minimum requirements to be admitted to a four-year college, the group of high school graduates who are considered to be "college-qualified." The major findings are:

- Although there are differences by income and race–ethnicity in the four-year college enrollment rates of college-qualified high school graduates, the differences between college-qualified low-income and middle-income students, as well as the differences among college-qualified black, Hispanic, Asian, and white students, are eliminated among those students who have taken the college entrance examinations and completed an application for admission, the two steps necessary to attend a four-year college.
- High school graduates whose parents have low levels of income and education are able to attend four-year colleges at the same rates as students from middle-income families, if they do what four-year colleges expect them to do. That is, if low-income students have an academic record and aptitude test scores which demonstrate even the minimal qualifications for admission to a four-year institution, if they take a college entrance examination, and if they submit an application for admission, the majority of low-income students enroll in postsecondary education, and over 83 percent attend a four-year college or university.
- College-qualified low-income students who have been accepted for admission to public four-year colleges and universities and those who have been accepted to private four-year colleges and universities are just as likely to enroll in them as are middle- and high-income students. There is no measurable difference by family income in the proportion of those accepted at private institutions who choose to enroll in a public four-year institution instead. There are also no differences in the enrollment rates of

those college-qualified blacks, Hispanics, Asians, or whites who have been accepted for admission to either public or private four-year colleges and universities.

- Low-income, black, and Hispanic high school graduates are less likely to be well prepared academically to attend a four-year college. Even among those who are college-qualified, low-income and Hispanic (but not black) students are less likely to take the college entrance examinations and apply for admission to a four-year institution.
- Among all college-qualified seniors who enrolled in postsecondary education, Hispanics were less likely than any other racial–ethnic group to attend a four-year institution. Instead, college-qualified Hispanics were more likely than any other racial–ethnic group to attend a public two-year institution. College-qualified Hispanics were also less likely to take college entrance examinations and submit an application for admission to a four-year institution compared with Asian, white, and black college-qualified students.
- Three-quarters of all 1992 high school graduates enrolled in some type of postsecondary institution by 1994. Almost half (45 percent) enrolled in a four-year institution, one-quarter (26 percent) enrolled in a public two-year college, and 4 percent enrolled in other institutions offering less than four-year programs.
- The proportion of all students who enrolled in postsecondary education within two years of high school graduation was directly related to family income: 64 percent of low-income, 79 percent of middle-income, and 93 percent of high-income students attended postsecondary education by 1994.
- About 80 percent of the low-income high school graduates who enrolled in postsecondary institutions received financial aid. Their average educational expenses after financial aid ranged from about $4,900 at public two- and four-year institutions to $5,700 at private, not-for-profit, four-year institutions. To help meet these costs, two-thirds of the low-income students worked while enrolled, for an average of 24 hours a week.
- When the 1992 high school graduates were in the eighth grade, 59 percent of low-income, 76 percent of middle-income, and 92 percent of high-income students said that they expected to finish college. There was no substantial change in these expectations by family income or race–ethnicity when they were seniors in 1992.
- Nearly 80 percent of the 1992 high school graduates said that they expected to attend postsecondary education immediately after high school. In October 1992, 65 percent were actually enrolled. By 1994, 75 percent had been enrolled. Among those students who had planned to attend immediately after high school, 89 percent had enrolled by 1994.

FOREWORD

This report examines the postsecondary enrollment patterns of 1992 high school graduates by 1994, two years after they graduated from high school. Specifically, it focuses on the access of low-income students and racial–ethnic minorities to postsecondary education and the degree to which the access of students with the academic qualifications to attend a four-year institution is limited by financial constraints. The analysis relies primarily on data from the second and third follow-up files of the National Education Longitudinal Study of 1988 (NELS:88), which began with a nationally representative sample of 1988 eighth graders who were followed up in 1990, 1992, and again in 1994. (A more complete description of the NELS:88 sample can be found in Appendix B of this report.) This was supplemented with information on college costs and financial aid for a comparable group of students in the National Postsecondary Student Aid Study, 1992–93 (NPSAS:93).

The NELS:88 surveys contain extensive information on student and parent attitudes about college costs and financial aid, educational expectations, plans for postsecondary education, the types of institutions to which they applied, and where they enrolled. In addition to information about family income, parental levels of education, and racial–ethnic background, the surveys contain many indicators of academic aptitude, achievement, and coursework in high school. This makes it possible to study differences in postsecondary enrollment patterns from a variety of perspectives.

The estimates presented in this report were produced using the NELS:88/94 and NPSAS:93 Data Analysis Systems (DAS). The DAS is a microcomputer application that allows users to specify and generate their own tables from the NELS and NPSAS data. The DAS produces design-adjusted standard errors necessary for statistical testing of differences shown in the tables. Additional information about the DAS can found in appendix B of this report.

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INTRODUCTION

This report uses data from the National Education Longitudinal Study of 1988 (NELS:88) to examine access to postsecondary education of high school seniors who graduated in 1992. Access is measured by comparing the postsecondary enrollment rates of groups of students with different background characteristics, with the implicit assumption that groups of students who show similar rates of enrollment in similar types of institutions have had similar access to them. The specific focus is on how differences in family income, parental education, and students' race–ethnicity are reflected in (1) enrollment in postsecondary education within two years of high school graduation; (2) the type of institution attended; (3) academic preparedness for admission to a four-year college; (4) taking the necessary steps toward admission to a four-year college; and (5) obtaining information about financial aid. A central issue is to what extent concerns about college costs and inadequate information about financial aid may deter low-income students from applying to four-year colleges and universities. Supplemental data from the National Postsecondary Student Aid Study (NPSAS:93) is also used to examine the college costs and financial aid reported for a comparable group of students who were enrolled in postsecondary education in 1992–93.

The descriptive reports of the second and third NELS:88 follow-up surveys have shown that black and Hispanic students and students with low socioeconomic status (SES) are less likely to take college preparatory courses, to apply to colleges and take college entrance exams, and to enroll in four-year institutions than are other students. Most of the differences in postsecondary enrollment by race–ethnicity and SES disappear among those students who were in the highest quartile on the aptitude test administered in the NELS survey.[1]

This report will expand these previous analyses, with a particular focus on those 1992 high school graduates who may be considered "college qualified" because they have adequate academic course preparation, grades, and aptitude test scores to meet the minimal entrance requirements of most four-year colleges. In addition, this report examines those students who had the initiative to take a college entrance exam and submit an application for admission to a four-year institution. If the financial aid system is providing equal educational opportunities and access to postsecondary schooling, one would expect no substantial differences by family income in the four-year college enrollment rates of students whose academic records show they are likely to be admitted to a four-year college and who have taken the necessary steps to be considered for admission. The findings of this study indicate that this is indeed generally the case: there were no substantial differences by family income in the four-year college enrollment rates of college-qualified high school graduates who apply to and are accepted for admission at four-year colleges.

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[1] U.S. Department of Education, National Center for Education Statistics, *A Profile of the American High School Senior in 1992* (Washington, D.C.: 1995); and U.S. Department of Education, National Center for Education Statistics, *National Educational Longitudinal Study: 1988–1994, Descriptive Summary Report* (Washington, D.C.: 1996).

The report begins by examining some of the important background characteristics of the 1992 high school graduates and their relationship to postsecondary enrollment and the types of institutions attended within two years of high school graduation. This is followed by an examination of postsecondary costs and financial aid among low-income students enrolled in 1992–93. Next is a comparison of the educational expectations of the high school graduates when they were in eighth grade to their expectations in the senior year, as well as their plans for postsecondary education as seniors. The college qualification index developed for this study will then be discussed, and used to focus on those students who appear to have been qualified for four-year college work. The focus then narrows to those among the college-qualified who take the college entrance examinations and apply to four-year colleges. Then the enrollment patterns of those who were accepted for admission to four-year colleges will be examined, including their choice of private and public institutions. This is followed by an examination of the relationship between taking the steps toward admission to a four-year college, concerns about affordability, and information acquired about financial aid. Finally, a multivariate analysis of two-year and four-year college enrollment rates is presented. The conclusion includes a series of tables (tables 35–37) that provide a summary and overview of the information presented in more detail in the text.

CHARACTERISTICS AND POSTSECONDARY ATTENDANCE OF 1992 HIGH SCHOOL GRADUATES

It is well established that family income, race–ethnicity, and parental education levels are related to postsecondary attendance patterns.[2] Information about these background characteristics for the 1992 high school graduates is provided in table 1. In this report, students were considered "low income" if the income reported by their parents was less than $25,000; "middle income" if it was at least $25,000 and under $75,000; and "high income" if it was $75,000 or more. Using this definition, about one-quarter (28 percent) of the 1992 high school graduates came from low-income families, somewhat more than half (57 percent) from middle-income families, and 15 percent from high-income families. Table 1 also illustrates that family income was directly related to the parents' highest education level: half (51 percent) of the families in which both parents had no more than a high school education also had incomes below $25,000, compared to 29 percent of families in which a parent had taken some college courses and 8 percent in which a parent was a college graduate. One-third (35 percent) of the families in which a parent held at least a bachelor's degree had incomes of $75,000 or more, compared to 6 percent or less of those in which no parent had completed four-year college.

Nearly three-fourths (73 percent) of all the 1992 high school graduates were white, 11 percent were black, 10 percent were Hispanic, 5 percent were Asian/Pacific Islanders, and 1 percent were American Indian/Alaskan Native.[3] More than half of the black and Hispanic students came from low-income families, compared to one-third of the Asian students and one-fifth of the white students. Although the income distribution of black and Hispanic families was similar, the

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[2] C. Manski and D. Wise, *College Choice in America* (Cambridge, MA: Harvard University Press, 1983), remains a basic source. For a survey of the more recent literature, see T. Baker and W. Velez, "Access to and Opportunity in Postsecondary Education in the United States: A Review," *Sociology of Education*, extra issue (1996): 82–101. Many studies use SES instead of income and education; both are factored into the derivation of SES. Since this study focuses on college costs and financial aid, it was more appropriate to use income as a separate variable.

[3] U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study: 1988–1994 (NELS:88), Data Analysis System. Because of the small sample size, American Indians were not included as a separate category of analysis in this study. Since Hispanics can be of any race, when the terms "white" and "black" are used in the text they should always be assumed to include the qualifier "not of Hispanic origin." Similarly, the term "Asian" should always be assumed to include Pacific Islanders. These qualifiers are always indicated in the tables, but their repeated inclusion in the text would have made the report awkward and difficult to read.

Table 1—Percentage distribution of 1992 high school graduates according to family income and parents' highest level of education, by race–ethnicity, family income, and parents' highest education level

	Family income			Parents' highest education level		
	Low (Less than $25,000)	Middle ($25,000–$74,999)	High ($75,000 or more)	High school graduate or less	Some college	College graduate
Total	28.1	57.3	14.6	26.5	41.0	32.5
Race–ethnicity						
Asian/Pacific Islander	33.5	47.0	19.4	21.9	29.2	48.9
Hispanic regardless of race	52.0	42.8	5.1	45.8	39.1	15.0
Black, not of Hispanic origin	53.8	41.5	4.7	35.4	47.6	16.9
White, not of Hispanic origin	21.2	61.8	16.9	23.2	40.7	36.2
Family income						
Low (less than $25,000)	*	*	*	47.4	43.0	9.7
Middle ($25,000–$74,999)	*	*	*	20.7	46.7	32.6
High ($75,000 or more)	*	*	*	5.3	16.5	78.3
Parents' highest education level						
High school graduate or less	51.3	45.8	3.0	*	*	*
Some college	29.2	64.9	5.8	*	*	*
College graduate	8.3	56.9	34.8	*	*	*

*Not applicable.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

parental education levels of Hispanics were lower than those of black students: nearly half (46 percent) of the Hispanic students came from families in which the parents had a high school education or less compared with 35 percent of black students.[4] Unlike black and Hispanic students, Asians were as likely as white students to come from high-income families, but their parents had achieved higher levels of education than whites. In fact, nearly half (49 percent) of the Asian students came from families in which a parent was a college graduate,[5] compared with about one-third (36 percent) of the white students. When comparing the students from minority backgrounds then, these broad differences in family income and educational levels should be kept in mind: Asian high school seniors are more likely to come from families with relatively high incomes and high levels of education, Hispanics from families with relatively low incomes and low educational levels, and blacks from families with relatively low incomes but higher levels of education than Hispanics (figure 1).

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[4] The parents of Hispanic high school graduates were also the most likely not to have finished high school (29 percent compared with 11 percent of Asian, 12 percent of black, and 4 percent of white students). U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study: 1988–1994 (NELS:88), Data Analysis System.

[5] The parents of Asian high school graduates were also more likely to hold graduate degrees than were parents of white graduates. U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study: 1988–1994 (NELS:88), Data Analysis System.

The postsecondary attendance patterns of the 1992 high school graduates by 1994 are displayed in table 2. One-quarter did not enroll in any postsecondary institution (25 percent), one-quarter enrolled in two-year public community colleges (26 percent), almost half enrolled in four-year colleges and universities (45 percent), and a small percentage enrolled in other institutions offering less than four-year programs (4 percent).[6]

The proportion of students who enrolled in postsecondary education within two years of high school graduation was related to both family income and parental education. More than 40 percent of the students whose parents had not gone beyond high school and 37 percent of those from low-income families did not enter postsecondary education. Among black and Hispanic students, the majority of whom came from low-income families, almost 30 percent did not pursue postsecondary education. Hispanics were more likely not to enter postsecondary education than either whites (24 percent) or Asians (14 percent); the difference between blacks and whites was not statistically significant. Among high-income students and those whose parents had a college degree, about 7 percent had not entered postsecondary education within two years of graduating from high school.

The proportions of low- and middle-income students attending two-year public colleges were similar (25 to 28 percent), but high-income students were less likely to attend this type of institution (14 percent). The two-year public college enrollment rates of students whose parents had less than a four-year college degree were also similar (27 to 30 percent), while students who had a parent with a four-year college degree were less likely to enroll in two-year public institutions. One third of Hispanics (34 percent) attended two-year public colleges, compared to about one-quarter of whites (25 percent) and blacks (23 percent) (figure 2).[7]

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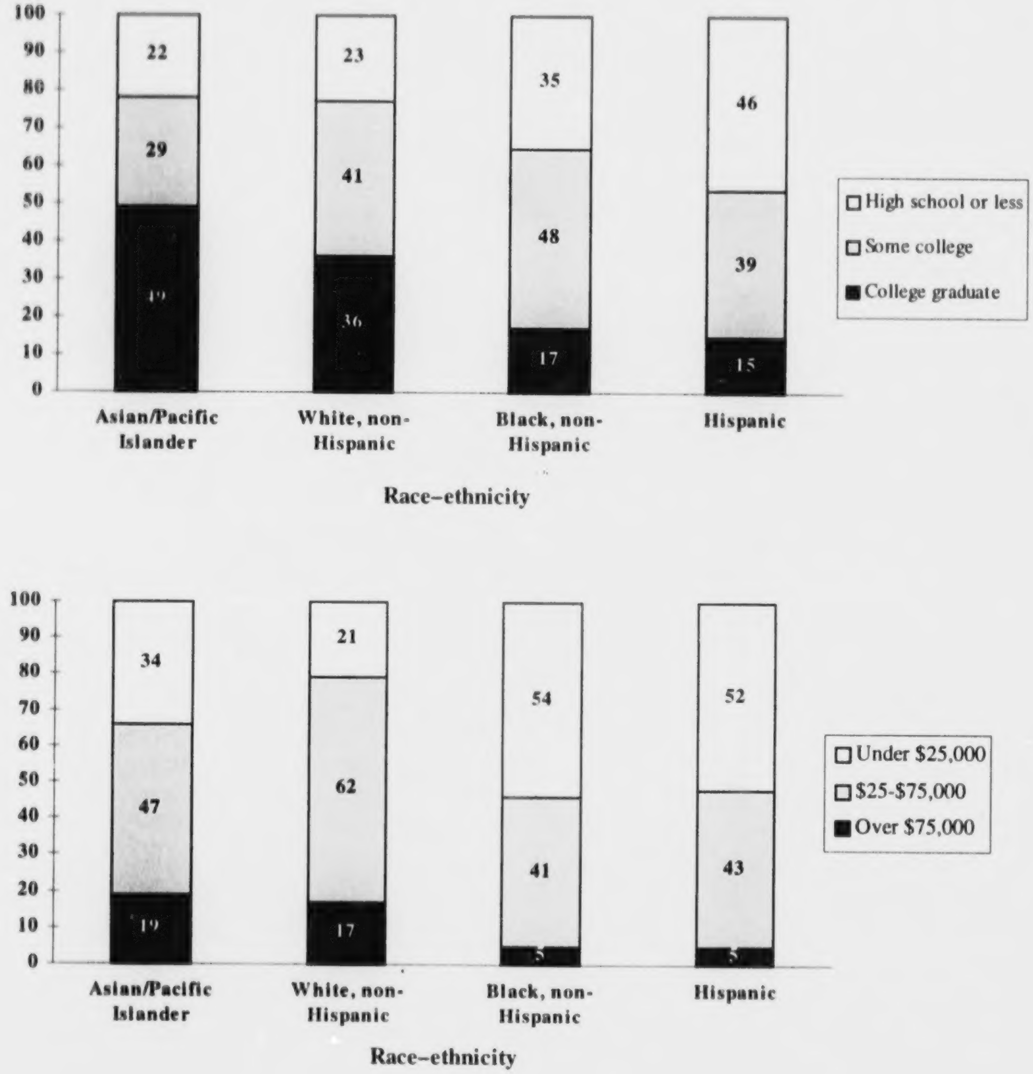
[6] Private, for-profit vocational institutions 3.1 percent; private, not-for-profit 2-year institutions 1.0 percent; and public less-than-2-year institutions 0.2 percent. U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study: 1988–1994 (NELS:88), Data Analysis System.

[7] There was no statistically significant difference between Hispanics and Asians.

Figure 1—Percentage distribution of 1992 high school graduates according to family income and parents' highest level of education, by race–ethnicity



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 2—Percentage distribution of 1992 high school graduates, according to postsecondary enrollment by 1994 and type of institution attended, by background characteristics

	No postsecondary education	Other, less than 4-year institution*	Public 2-year institution	Any 4-year institution
Total	24.8	4.4	25.7	45.1
Race–ethnicity				
Asian/Pacific Islander	13.8	3.6	28.4	54.2
Hispanic regardless of race	29.4	5.7	34.3	30.5
Black, not of Hispanic origin	28.7	6.2	22.7	42.4
White, not of Hispanic origin	24.1	4.0	24.8	47.1
Family income				
Low (less than $25,000)	36.5	5.6	25.4	32.5
Middle ($25,000–$74,999)	20.7	4.2	27.9	47.2
High ($75,000 or more)	6.9	2.4	14.1	76.5
Parents' highest education level				
High school graduate or less	41.0	5.8	27.3	25.8
Some college	25.3	4.2	29.5	41.0
College graduate	7.5	3.1	18.0	71.4

*Primarily private, for-profit vocational and private, not-for-profit 2-year institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Unlike the community college enrollment pattern,[8] enrollment rates in four-year colleges and universities were directly related to students' family income and the level of their parents' education. The proportion of students enrolled in four-year institutions increased at every income level, with one-third of low-income students (33 percent), almost half of middle-income students (47 percent), and about three-fourths of high-income students (77 percent) attending such institutions. Similarly, the proportions of students enrolled in four-year institutions increased with the level of their parents' education. Four-year college enrollments represented 54 percent of Asian, 47 percent of white, 42 percent of black, and 31 percent of Hispanic high school graduates. (figure 2).

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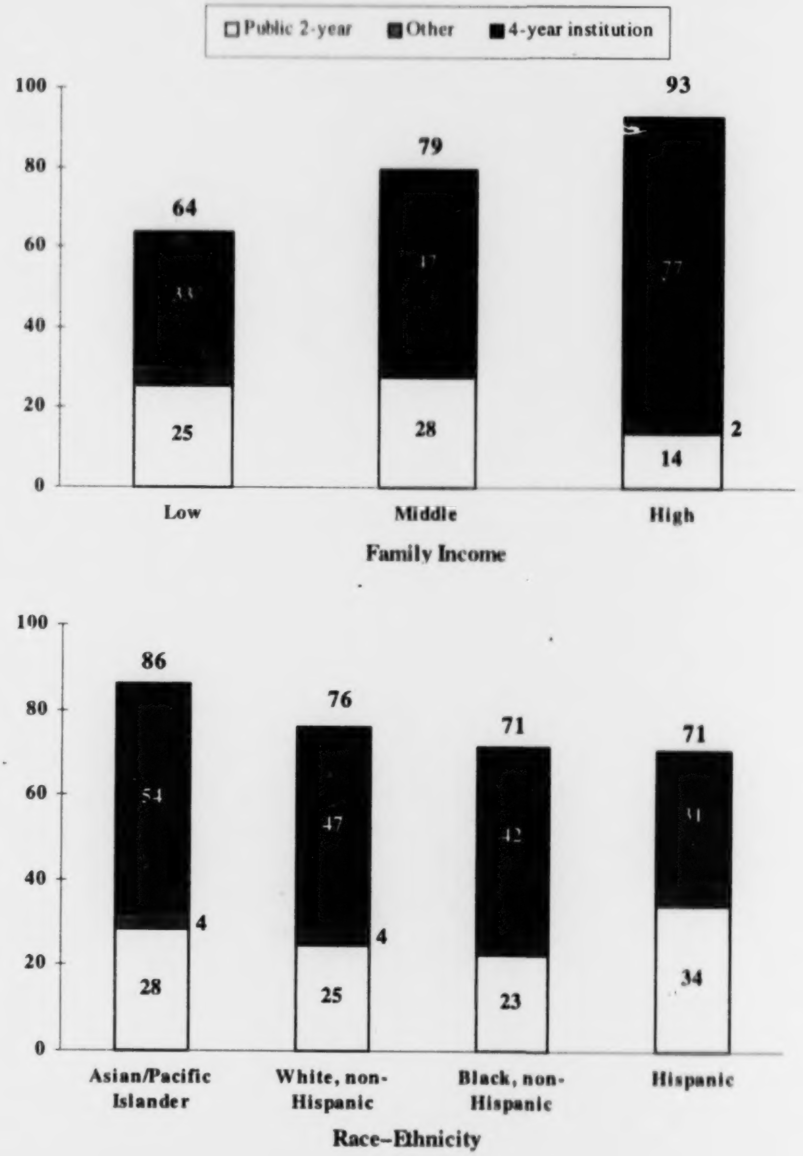
[8] The terms "two-year public institution" and "community college" are used interchangeably in this report.

Figure 2—Percentage of all 1992 high school graduates who enrolled in postsecondary education by 1994 according to type of institution attended, by family income and race–ethnicity



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS: 88), Data Analysis System.

FINANCIAL AID AND COLLEGE COSTS

The distinct differences in enrollment patterns by family income are consistent with a common perception that high costs deter low-income students from attending postsecondary education at all, and if they do attend, deter them from enrolling in four-year institutions where the tuition is higher. This section of the report will provide a brief examination of college costs in 1992–93 and the financial aid received by low-income students to help them meet those costs.

The NELS:88 high school graduates who attended postsecondary education were asked whether they received financial aid, and if they received aid, to report the type of aid and the estimated total dollar amount. The responses of the low-income students are shown in table 3. The majority of low-income students reported receiving financial aid, with 66 percent of those at public two-year institutions, 90 percent at public four-year institutions, and 96 percent at private, not-for-profit,[9] four-year institutions reporting that they received aid. The average dollar amount of aid that was reported ranged from about $1,700 at public two-year to about $8,400 at private four-year institutions. While 10 percent of the low-income students at public two-year colleges reported having taken out student loans, over half at public four-year institutions had such loans and three-quarters at private four-year institutions had loans. Half the low-income students at private four-year institutions reported holding work-study jobs while enrolled.[10]

The amount of detail about college costs and financial aid collected in the NELS:88 interviews is limited and is based only on student-reported information. The National Postsecondary Student Aid Study (NPSAS:93), which is based primarily on financial aid transcripts from the institutions, provides a more complete picture of the educational finances of a comparable group of low-income high school seniors who started postsecondary education in 1992–93. Table 4 shows the types and total amount of financial aid received in 1992–93 by low-income first-year

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[9] Although there are private, for-profit, four-year institutions, none of the NELS:88 high school graduates had enrolled in one by 1994. Henceforth the term "private" institution should be assumed to include only not-for-profit institutions.

[10] Private four-year institutions are able to provide a larger proportion of students with Federal College Work-Study jobs because the funds in this program are allocated to institutions according to a formula. However, institutions receive a guaranteed base amount which reflects participation in the program in the early 1970s.

Table 3—Percentage of low-income[1] 1992 high school graduates who attended postsecondary education by 1994 receiving types of financial aid and average amount of total aid as reported by students in NELS:88, by type of postsecondary institution attended

	Total aided	Grants and scholarships	Student loans	Work-study jobs	Amount of financial aid[2]
Total	81.0	72.8	39.0	17.4	$3,980
Type of institution					
Public 2-year	65.8	57.7	9.9	6.4	1,696
Public 4-year	89.9	83.6	51.3	19.3	3,788
Private, not-for-profit 4-year	96.1	88.4	75.4	51.6	8,429
Other less-than-4-year	87.7	70.6	60.7	4.3	4,198

[1] Family income less than $25,000.

[2] Average for those who received aid.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 4—Percentage of low-income[1] dependent 1992 high school graduates enrolled in postsecondary education in 1992–93 receiving types of financial aid and average amount of total aid as reported by the institutions in NPSAS:93, by type of institution attended

	Total aided	Grants and scholarships	Student loans	Work-study jobs	Amount of financial aid[2]
Total	79.3	76.3	38.9	15.7	$5,060
Type of institution					
Public 2-year	64.2	62.1	9.8	3.7	2,083
Public 4-year	83.8	81.8	44.8	16.7	4,537
Private, not-for-profit 4-year	93.3	90.7	65.4	44.6	9,547
Other less-than-4-year	88.5	80.5	63.6	2.8	5,031

[1] Family income less than $25,000.

[2] Average for those who received aid.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992–93 National Postsecondary Student Aid Study (NPSAS:93), Data Analysis System.

dependent students who graduated from high school in 1992 as reported in NPSAS:93. The percentage of low-income students receiving financial aid at public two-year (64 percent) and private four-year institutions (93 percent) is similar to that reported by the students in the NELS:88 survey, but is slightly lower at public four-year institutions (84 percent). The average dollar amounts of total aid reported by the public two-year and public four-year institutions for students in NPSAS:93 were somewhat higher than the totals recalled by the NELS students in the 1994 interviews.[11] Such differences are to be expected in comparing institution-reported financial aid dollar amounts to student responses in a telephone survey. Moreover, although the two groups have similar characteristics, they are not identical.[12]

The amounts of financial aid that the students received are arguably meaningful only in relation to tuition and other educational costs, which vary by type of institution. As shown in table 5, the average yearly tuition at the institutions attended by the low-income students in 1992–93 ranged from about $900 at two-year public colleges to almost $9,000 at four-year private institutions. To help cover their costs, three-quarters of the low-income students received grant aid, such as the federal Pell grants and a variety of grant and scholarship programs funded by states, the institutions, or other organizations.

One useful measure of how well financial aid reduces costs is "net tuition," the amount of tuition minus grant aid, which is the remaining amount that the student must pay to the institution for instruction.[13] As shown in table 5, more than half of the low-income students attending public institutions had their entire tuition charges covered by the grant and scholarship aid, compared to about one-quarter of the low-income students attending private four-year institutions.[14] The proportion of low-income students who owed any tuition after grant aid, and the average amount remaining to be paid from other sources, is also shown in table 5. For example, those low-income students whose private four-year tuition costs were *not* fully covered by grants (72 percent) had an average of $4,200 in tuition remaining to be paid from other sources and other types of aid, such as loans and work study.

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[11] The NELS:88 survey asked students to estimate only a total aid amount, not amounts by type of aid. There was no difference in the average amount of aid reported by students in the two surveys who attended private four-year or other less-than-four-year institutions.

[12] The 6 percent of 1992 high school graduates in NPSAS:93 who were independent students were excluded from the comparison because their parents' income is not known. U.S. Department of Education, National Center for Education Statistics, 1992–93 National Postsecondary Student Aid Study (NPSAS:93), Data Analysis System.

[13] This approach is used by M. McPherson and M. Shapiro, *Keeping College Affordable* (Washington, D.C.: 1991): 60–63.

[14] If the grant and scholarship aid is greater than tuition, the additional amount is applied to other, non-tuition, educational costs.

Table 5—Average tuition, grant aid, and net tuition of low-income[1] dependent 1992 high school graduates enrolled in postsecondary education in 1992–93, by type of institution attended

	Average tuition and fees amount	Percent with grant aid	Average grant amount[2]	Percent with zero net tuition[3]	Percent with positive net tuition[3]	Average positive net tuition[4]
Total	$3,440	76.3	$3,455	44.2	55.8	$2,526
Type of institution						
Public 2-year	878	62.1	1,776	50.9	49.2	721
Public 4-year	2,373	81.8	2,996	57.6	42.4	1,892
Private, not-for-profit 4-year	8,778	90.7	6,906	28.3	71.7	4,209
Other less-than-4-year	5,052	80.5	2,289	17.7	82.3	4,067

[1] Family income less than $25,000.

[2] Average for those who received grants.

[3] Tuition and fees minus grant aid; zero includes negative values when grant aid covered more than tuition costs.

[4] Average includes those who received no grant aid.

NOTE: Details may not add to 100 percent due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992–93 National Postsecondary Student Aid Study (NPSAS:93), Data Analysis System.

In addition to tuition, however, students have other expenses related to attendance, such as books and supplies, room and board, transportation, and other personal living expenses. The total cost of attendance, which includes these expenses as well as tuition, is estimated in student budgets used by the institutions in awarding financial aid. In 1992–93, these average costs of attendance, shown in table 6, ranged from about $6,000 to attend a two-year public college to almost $15,000 to attend a four-year private institution. By subtracting the total amount of financial aid (including loans) received from the total cost of attendance, the "net cost" to the student after aid can be calculated. Although the average net cost to the low-income 1992 high school graduates ranged from about $4,900 at public two-year and four-year institutions to about $5,700 at private four-year institutions, the difference was not statistically significant.[15] For example, despite the difference in tuition between public two-year and four-year institutions, the average net costs of education for low-income students were similar at these types of institutions. One of the important effects of financial aid, therefore, is to reduce the differences in net costs between various institutions for low-income students, which may give them a greater choice of institutions to attend.

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[15] U.S. Department of Education, National Center for Education Statistics, *How Low-Income Undergraduates Financed Postsecondary Education: 1992–93* (Washington, D.C.: 1996): 34, also reports net costs for dependent low-income students, but the definitions are not the same. In that report, low income is defined as 125 percent of poverty level (using income and family size); undergraduates in all class levels are included (rather than only first-year students who had just graduated from high school); and educational costs are based on student-reported estimates of monthly expenses (rather than institutional student budgets). The average net costs reported are $4,900 at public less-than-4 year, $5,400 at public 4-year, and $6,900 at private 4-year institutions.

Table 6—Average amounts of tuition, total costs of attendance, financial aid, and net cost after aid for low-income[1] 1992 high school graduates enrolled in postsecondary education in 1992–93, by type of institution attended

	Tuition and fees	Total cost of attendance[2]	Total aid amount[3]	Total grant amount[4]	Total loan amount[4]	Total work-study amount[4]	Net cost after aid[5]
Total	$3,440	$9,119	$5,060	$3,455	$2,559	$1,143	$5,156
Type of institution							
Public 2-year	878	6,145	2,083	1,776	—	—	4,864
Public 4-year	2,373	8,657	4,537	2,996	2,244	1,220	4,922
Private, not-for-profit 4-year	8,778	14,561	9,547	6,906	2,830	1,123	5,704
Other less-than-4-year	5,052	10,057	5,031	2,289	3,060	—	5,668

—Too few cases for a reliable estimate.

[1] Family income less than $25,000.

[2] Average student budget reported by institutions, including tuition and fees.

[3] Average amount for those who received any aid.

[4] Average amount for those who received this type of aid.

[5] Cost of attendance minus total aid, including those who received no aid.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992–93 National Postsecondary Student Aid Study (NPSAS:93), Data Analysis System.

Since low-income students and their parents still had to pay an average of about $5,000 to cover expenses related to postsecondary education, the effect of financial aid on access is not as clear as the potential effect on college choice. Where did the additional $5,000 or more come from? Some of the sources of funds reported by low-income students are shown in table 7. Half the low-income students reported that they were living at home with their parents, which reduced their living expenses. In addition, about half reported direct contributions from their parents, averaging about $2,000, while nearly two-thirds (65 percent) reported working while enrolled, for an average of 24 hours per week. At the two-year public colleges, 70 percent of the students lived at home, and 80 percent worked an average of 27 hours per week while enrolled. Thus, through some combination of financial aid, parental contributions, work, and other strategies, these low-income students were able to meet their tuition and living expenses while enrolled.

There is little doubt that the cost of attending postsecondary education posed difficulties for low-income 1992 high school graduates, and while financial aid reduced the differences in the amounts required to attend different types of institutions, on average, several thousand dollars remained to be paid. Nevertheless, as shown earlier in table 2, nearly two-thirds of the low-income 1992 high school graduates were enrolled in postsecondary education within two years of high school graduation despite the financial burden.

Table 7—Percentage of dependent low-income[1] 1992 high school graduates enrolled in postsecondary education in 1992–93 who lived with parents, received direct contributions from parents, and worked while enrolled, by type of institution attended

	Percent living at home with parents	Percent receiving contribution from parents	Average contribution from parents[2]	Percent working while enrolled	Average hours worked per week[3]
Total	49.2	53.2	$2,001	65.3	23.8
Type of institution					
Public 2-year	69.6	43.0	771	79.5	27.0
Public 4-year	33.2	59.6	2,538	52.4	20.2
Private, not-for-profit 4-year	28.6	72.1	3,076	58.8	17.1
Other less-than-4-year	62.4	44.2	1,621	62.4	26.8

[1] Family income less than $25,000.
[2] Average for those who received parental contributions.
[3] Average for those who worked while enrolled.

SOURCE: U.S. Department of Education, National Center for Education Statistics, 1992–93 National Postsecondary Student Aid Study (NPSAS:93), Data Analysis System.

POSTSECONDARY EXPECTATIONS, PLANS, AND ATTENDANCE THROUGH 1994

Although the importance of costs and financial aid should not be understated, postsecondary enrollment patterns reflect much more than financing issues. First, a high school student must want or expect to continue his or her education. Next, the student must make some plans about when and where to enroll. Those planning to attend four-year colleges and universities must also complete two appropriate steps: taking a college entrance examination such as the SAT or ACT, and applying for admission. In addition, if financial aid is needed, the student and his or her parents must get information about and file an application for financial aid. Finally, the student must actually be offered admission to an institution. All of this happens before enrollment, and all of these factors, from expectations to plans to college applications, may be influenced by the income, educational level, and racial–ethnic background of the family.

Educational aspirations and expectations have often been found to be related to postsecondary attendance.[16] In the NELS:88 survey, students were asked in both the eighth grade (1988) and in their senior year (1992) about the level of education they expected to achieve. Their responses to the question "As things stand now, how far in school do you think you will get?" in 1988 and in 1992 are displayed in table 8. As early as the eighth grade, the expectation of finishing college was directly related to family income and parental levels of education.[17] Among eighth graders from low-income families 59 percent expected to finish college, compared with 76 percent from middle-income and 92 percent from high-income families. Hispanic eighth graders were less likely to expect to finish college than either whites or Asians.

When the students were asked this question again in 1992 during their senior year, there was a small increase in the proportion saying that they expected some postsecondary education (from 20 percent to 25 percent) and a small decrease in those who expected to finish college (from 73 percent to 71 percent). However, there were *no* measurable changes among low-income students, blacks, or Hispanics in the proportion expecting to finish college. Over the period of four years there had been no lowering of expectations on average among those groups of students whose families would have the greatest concerns and difficulties in financing a college education, although as high school seniors they were presumably much more aware of college costs and financial aid than they had been in the eighth grade.

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[16] M. Paulsen, *College Choice: Understanding Student Enrollment Behavior* (ASHE-ERIC Higher Education Report No. 6, Washington, D.C.: 1990).

[17] Students who expected to attain at least a bachelor's degree were considered to have expected to "finish college." Those who expected to complete trade or vocational school or "some college" were considered to have expected to complete "some postsecondary." See appendix A for a description of the expectation variable.

Table 8—Percentage distribution of 1992 high school graduates according to their educational expectations in 1988 and in 1992, by background characteristics

	Expectations (1988)			Expectations (1992)		
	No PSE*	Some PSE*	Finish college	No PSE*	Some PSE*	Finish college
Total	7.3	19.9	72.8	4.5	24.8	70.8
Race–ethnicity						
Asian/Pacific Islander	5.3	18.0	76.8	2.8	18.4	78.8
Hispanic regardless of race	9.3	26.6	64.2	4.7	29.6	65.7
Black, not of Hispanic origin	5.9	23.4	70.7	3.1	23.8	73.1
White, not of Hispanic origin	7.2	18.6	74.2	4.7	24.6	70.7
Family income						
Low (less than $25,000)	11.8	29.4	58.8	7.0	33.6	59.4
Middle ($25,000–$74,999)	5.8	18.5	75.7	3.6	23.3	73.2
High ($75,000 or more)	1.4	6.9	91.8	0.8	7.1	92.1
Parents' highest education level						
High school graduate or less	15.6	29.6	54.9	8.3	38.4	53.3
Some college	6.2	23.1	70.7	4.5	27.2	68.3
College graduate	1.4	7.6	91.0	1.0	9.5	89.5

*Postsecondary education.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

In addition to the question about their educational expectations, the seniors were also asked a more concrete question: whether they *planned* to continue their education immediately after high school.[18] Their plans are compared to their actual enrollment patterns in table 9. More than three-quarters (79 percent) indicated that they planned to enroll in postsecondary education immediately after high school. When those who said that they did not plan to continue immediately were asked if they *ever* intended to continue, virtually all (97 percent) of the high school graduates said that they planned to continue their education at some time after high school. More than 94 percent of students from all racial–ethnic groups, all family income levels, and all parental education levels said that they planned to attend postsecondary education at some time.

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[18] Although the terms are similar, in this report "expectations" refers to one specific question in the NELS survey ("How far in school do you think you will get?") which was asked in 1988 and again in 1992, while "plans" refers to another question (asked only in 1992) about their plans immediately after high school.

Table 9—Percentage of 1992 high school graduates who planned to attend postsecondary education after high school, percentage that enrolled in postsecondary education by October 1992 and by 1994 and the percentage enrolled by 1994 of those who planned to attend immediately after high school, by background characteristics

	Planned ever to attend PSE*	Planned to attend PSE* immediately after high school	Total enrolled in PSE* in October, 1992	Total enrolled in PSE* by 1994	Planned to attend PSE* immediately after high school: enrolled by 1994
Total	96.8	79.4	65.3	75.2	88.6
Race–ethnicity					
Asian/Pacific Islander	98.1	84.1	78.1	86.2	93.8
Hispanic regardless of race	97.2	76.4	57.6	70.6	84.3
Black, not of Hispanic origin	96.4	78.1	59.5	71.3	83.6
White, not of Hispanic origin	96.7	79.7	66.5	75.9	89.6
Family income					
Low (less than $25,000)	94.3	70.4	53.0	63.5	83.0
Middle ($25,000–$74,999)	97.4	81.8	69.3	79.3	89.8
High ($75,000 or more)	99.3	92.4	86.9	93.1	96.2
Parents' highest education level					
High school graduate or less	94.1	67.7	47.2	59.0	78.1
Some college	96.4	78.4	64.3	74.7	88.1
College graduate	99.3	90.6	85.3	92.5	95.9

*Postsecondary education.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Differences by family income and education levels emerge, however, when the seniors were asked if they intended to enroll *immediately* after high school (table 9). The proportion planning to attend postsecondary education immediately after high school was directly related to family income and parental education. For example, 70 percent of low-income students, compared with 82 percent of middle-income and 92 percent of high-income students, said that they planned to attend postsecondary education immediately after high school.

The proportion of high school graduates who actually enrolled in postsecondary education in the fall term (October 1992) was 65 percent.[19] By 1994, two years after graduating from high school, three-quarters (75 percent) of the 1992 high school graduates had enrolled in postsecondary education.

Enrollment in postsecondary education within two years of high school graduation was directly related to both the family income and the education levels of the students' parents. By 1994, 64 percent of low-income students, compared to 79 percent of middle-income and 93 percent of high-income students, had enrolled in postsecondary education. Those who said that they planned to attend *immediately* after high school, however, had high enrollment rates: 89 percent actually enrolled in postsecondary education within two years. Enrollment rates were also high (83 to 84 percent) for those low-income, black, and Hispanic students who had planned to attend postsecondary education immediately after high school, although the enrollment rates were even higher for the middle-income (90 percent), white and Asian (90 to 92 percent), and high-income (96 percent) students who had also planned to do so.

Table 10 focuses on those seniors who said that they planned to attend a *four-year* college or university immediately after high school.[20] Nearly all of these seniors attended some postsecondary institution (94 percent); over three-quarters (78 percent) enrolled in four-year institutions. Among those who planned to attend a four-year college, low- and middle-income students were less likely to actually enroll in a four-year institution than high-income students (72 and 77 percent compared to 89 percent, respectively). Black and Hispanic students were also less likely to enroll in four-year institutions than white and Asian students. About 15 percent of those who planned to attend a four-year college immediately after high school enrolled in a two-year public college instead. The public two-year college enrollment rate of those who planned to attend four-year institutions was similar for both low- and middle-income students and for all racial–ethnic groups (about 15 to 17 percent) except for Hispanics (22 percent), who were more likely to attend community colleges than whites.[21]

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[19] This is comparable to the October college-going rate (62 percent) reported in the Current Population Survey (CPS), because the CPS rate does not include enrollments in less-than-2-year institutions (about 3 percent of the NELS students). For the annual CPS college-going rates by income and race–ethnicity see U.S. Department of Education, National Center for Education Statistics, *The Condition of Education 1996* (Washington, D.C.: 1996): 52–53.

[20] This constituted 71 percent of all 1992 high school graduates. National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 10—Percentage distribution of all 1992 high school graduates who planned to attend a 4-year institution immediately after high school, according to postsecondary enrollment by 1994 and type of institution attended, by background characteristics

	No postsecondary education	Other less-than-4-year institution*	Public 2-year institution	Any 4-year institution
Total	6.0	1.1	15.1	77.8
Race–ethnicity				
Asian/Pacific Islander	4.0	0.6	14.7	80.6
Hispanic regardless of race	11.3	1.6	21.8	65.3
Black, not of Hispanic origin	10.0	1.9	15.2	72.9
White, not of Hispanic origin	4.9	1.0	14.5	79.6
Family income				
Low (less than $25,000)	10.0	1.2	16.8	72.1
Middle ($25,000–$74,999)	4.8	1.3	16.7	77.2
High ($75,000 or more)	2.8	0.5	7.5	89.2
Parents' highest education level				
High school graduate or less	13.3	1.6	19.8	65.3
Some college	6.6	1.2	18.5	73.7
College graduate	2.5	0.8	9.4	87.3

*Primarily private, for-profit vocational and private, not-for-profit 2-year institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

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[21] V. Lee and K. Frank found that 1980 Hispanic high school graduates were twice as likely to have enrolled in a community college than a four-year institution within two years after high school graduation. "Students' Characteristics That Facilitate the Transfer from Two-Year to Four-Year Colleges," *Sociology of Education* 63 (1990): 178–193.

QUALIFICATION FOR ADMISSION TO FOUR-YEAR COLLEGES

Regardless of how motivated students are to attend a four-year college or university, they must meet admission standards measured by criteria such as grade point average (GPA), class rank, standardized test scores, and academic coursework. Furthermore, prospective students must take a college entrance examination and submit an application for admission. In attempting to explain the gap in four-year college enrollment rates among income levels and racial–ethnic groups, two major factors will be examined: academic aptitude and achievement[22] and taking the necessary steps toward admission to a four-year institution, which include taking a college entrance exam (SAT or ACT) and submitting an application.

College admissions decisions are based on both objective and subjective criteria. In assessing applicants' qualifications, admissions officers try to look at as much information as possible, taking into account the strengths and weaknesses of students in relation to their situation. For example, an applicant from a poor urban school district who has very low SAT scores may be admitted on the basis of a high class rank. For this study, a composite measure of academic qualification for four-year college work was developed that attempts to approximate the college admissions process. This "college qualification index" is based on cumulative academic course GPAs, senior class rank, the 1992 NELS aptitude test scores, and the SAT and ACT college entrance examination scores, with an adjustment for academic coursework. Since admission standards and requirements vary widely among four-year colleges and universities, the approach used was empirical. It was based on an examination of the actual distribution of these five measures of academic aptitude and achievement among those graduating NELS seniors who did attend a four-year college or university by 1994.

Data sources were available for approximately half (45 percent) of the NELS graduating seniors for four or five of the criteria: class rank, GPA, the NELS test, and ACT or SAT scores or both (table 11). For about one-third (36 percent) of the seniors there were only three data sources available because they had no ACT or SAT scores; most of these had NELS test scores, however.

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[22] These are often included in studies examining educational inequality. See, for example, K. Alexander et al., "Consistency and Change in Educational Stratification: Recent Trends Regarding Social Background and College Access," *Research in Social Stratification and Mobility* 6 (1987): 161–185.

In order to identify as many students as possible who were potentially academically qualified for four-year college work, even if data were missing for these students on some of the criteria, the seniors were classified according to the *highest* level they had achieved on *any* of the five criteria for which data were present. That is, the college qualification index approximates an admissions process which would only take into consideration the applicants' strongest measure of academic performance.

The initial classification of the graduating seniors was determined as follows:

- Very highly qualified: those whose highest value on any of the five criteria would put them among the top 10 percent of four-year college students (specifically the NELS 1992 graduating seniors who enrolled in four-year colleges and universities) for that criterion. Minimum values were GPA=3.7, class rank percentile=96, NELS test percentile=97, combined SAT=1250, composite ACT=28.
- Highly qualified: those whose highest value on any of the five criteria would put them among the top 25 percent of four-year college students for that criterion. Minimum values were GPA=3.6, class rank percentile=89, NELS test percentile=90, combined SAT=1110, composite ACT=25.
- Somewhat qualified: those whose highest value on any of the five criteria would put them among the top 50 percent (i.e., in the second quartile) of four-year college students for that criterion. Minimum values were GPA=3.2, class rank percentile=75, NELS test percentile=76, combined SAT=960, composite ACT=22.
- Minimally qualified: those whose highest value on any of the five criteria would put them among the top 75 percent (i.e., in the third quartile) of four-year college students for that criterion. Minimum values were GPA=2.7, class rank percentile=54, NELS test percentile=56, combined SAT=820, composite ACT=19.
- Marginally or not qualified: those who had no value on any criterion that would put them among the top 75 percent of four-year college students (i.e., all values were in the lowest quartile). Those in vocational programs (according to their high school transcripts) were also classified as not college qualified.[23]

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[23] This affected the classification of less than 1 percent. Very few students whose transcripts indicated that they were in vocational programs met any of the other criteria for college qualification.

Table 11—Percentage distribution of 1992 high school graduates according to the number of sources available for classification as "college qualified," by college qualification index and enrollment status

	Sources available for college qualification index[1]			
	One	Two	Three[2]	Four or five[3]
	All 1992 high school graduates			
Total	9.0	9.8	36.0	45.1
College qualification index				
Marginally or not qualified	13.6	17.9	48.8	19.7
Minimally qualified	9.4	8.2	39.8	42.6
Somewhat qualified	9.1	6.2	29.4	55.3
Highly qualified	4.6	3.8	22.3	69.2
Very highly qualified	2.9	3.4	24.2	69.5
	All 1992 high school graduates who attended four-year colleges			
Total	9.1	4.5	21.8	64.6
College qualification index				
Marginally or not qualified	20.4	9.5	26.0	44.1
Minimally qualified	15.1	4.6	23.9	56.5
Somewhat qualified	11.8	5.0	21.3	61.9
Highly qualified	5.7	3.3	19.1	71.9
Very highly qualified	3.3	3.2	22.4	71.1
	All 1992 high school graduates who did not enroll in a four-year college			
Total	9.4	19.2	54.1	17.4
College qualification index				
Marginally or not qualified	11.2	22.5	56.3	10.0
Minimally qualified	6.9	15.3	53.4	24.4
Somewhat qualified	6.4	11.5	49.3	32.8
Highly qualified	2.1	9.2	33.6	55.0
Very highly qualified	0.0	0.3	54.7	44.9

[1] High school GPA, rank in class, NELS 1992 aptitude test, SAT and ACT test scores.

[2] Those with three sources always include at least one standardized test score (NELS, SAT, or ACT).

[3] Those with four or more sources always include either the SAT or the ACT scores.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Then some adjustments were made for programs of rigorous academic coursework, defined as including at least 4 years of English; 3 years each of science, mathematics, and social studies; and 2 years of a foreign language.

- Those who had taken a program of rigorous academic courses were moved up into one higher level of qualification; and
- Those in the "very highly qualified" category were moved down into the "highly qualified" category if they had not taken rigorous academic coursework.[24]

The average scores for each of the levels of the four-year college qualification index, both for those who did and did not actually enroll in a four-year institution and for all of the high school graduates, are shown in table 12. Since the college qualification index was based on the highest score on any of the five criteria and then adjusted (usually upward) to reflect academic coursework, the averages for the individual categories are lower than the interval values used to classify the students initially. Those who enrolled and were classified as minimally college qualified, for example, had an average academic course GPA of 2.3, an average combined SAT score of 758, an average class rank (42nd percentile) below the median, and NELS aptitude test scores (51st percentile) which put them near the median of their senior class. Except for a lower average NELS aptitude test score (43rd percentile), the average scores for the marginally or not qualified *who enrolled* in a four-year college were similar to those who enrolled and were classified as minimally qualified. However, the *total* group of those classified as marginally or not qualified for four-year college work had an average class rank and NELS aptitude test scores which put them in the bottom third of their senior class, an average GPA of 2.1, and an average combined SAT score of 700.

One reason that there is very little difference in the average scores between the minimally and the marginally or not qualified students who enrolled in a four-year college is the problem of missing data. As shown in table 11 above, the proportion of students in these groups with only one source available for the qualification index was about twice as high among those who attended a four-year college as among those who did not (20 percent compared to 11 percent of those marginally or not qualified; 15 percent compared to 7 percent of those minimally qualified). The methodology used to construct the qualification index has a bias, since the probability of scoring high on at least one criterion increases with the number of data sources available for the student. Among all high school graduates, the students classified as marginally or not

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[24] This was done to assure that the very highly qualified had both rigorous coursework and high scores.

Table 12—Average scores for the criteria used to classify 1992 high school graduates' qualifications for 4-year college work according to postsecondary enrollment, by levels of college qualification and enrollment status

	Combined SAT score	Class rank (percentile)	GPA calculated from academic courses	1992 NELS test percentile	Composite ACT score
All 1992 high school graduates					
Total	927	53	2.6	55	21
College qualification index*					
Marginally or not qualified	700	29	2.1	32	17
Minimally qualified	740	42	2.3	47	18
Somewhat qualified	841	57	2.7	62	20
Highly qualified	983	73	3.1	76	23
Very highly qualified	1,109	85	3.4	86	26
All 1992 high school graduates who attended four-year colleges					
Total	980	67	2.9	71	22
College qualification index*					
Marginally or not qualified	758	41	2.3	43	18
Minimally qualified	758	42	2.3	51	18
Somewhat qualified	853	57	2.7	64	20
Highly qualified	1,006	74	3.1	78	23
Very highly qualified	1,121	86	3.4	87	26
All 1992 high school graduates who did not enroll in a four-year college					
Total	772	35	2.2	37	18
College qualification index*					
Marginally or not qualified	642	26	2.0	28	16
Minimally qualified	705	43	2.3	45	17
Somewhat qualified	782	55	2.6	60	19
Highly qualified	866	72	2.8	65	23
Very highly qualified	—	81	3.2	79	—

—Sample size too small for a reliable estimate.

*4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

qualified were more likely than any qualified group to have data for only one or two criteria, so they were more likely to be misclassified than those with more sources of data.[25]

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[25] The majority of those who had only one source available had only the NELS aptitude test scores.

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Table 13 shows the number of sources available for the college qualification index by student background characteristics for all high school graduates and for those who enrolled in four-year colleges. Those with three sources available always had at least one standardized test score (usually NELS) and those with four or five sources always had either SAT or ACT scores. Among all high school graduates, Hispanics, blacks, and low-income students were less likely to have four or five sources available, which means they were less likely to take the college entrance examinations than were whites, Asians, or higher income students. Among those who attended four-year colleges, black students were more likely than whites to have only one or two sources available.[26]

The distribution of the 1992 high school graduates who enrolled in four-year colleges and universities according to the categories of this college qualification index are shown in table 14. Over half were classified as highly or very highly qualified (30 percent and 27 percent, respectively). Thirteen percent were minimally qualified and 11 percent were classified as marginally or not qualified for regular admission to a four-year college according to this index. As discussed above, the average scores of the latter two groups were similar, and 15 to 20 percent only had one source available for the qualification index, so the differences in the academic preparation of the minimally and the marginally qualified who *enrolled* may be relatively small.

In addition to the problem of missing data, the qualification index has other limitations as a predictor of college admissions. At most four-year institutions, college admissions decisions are not based solely on grades, class rank, and test scores.[27] Other criteria may also be considered, such as letters of recommendation, musical and artistic talents, ability in sports, or parents who are alumni. Many colleges have policies which set aside a certain percentage of admissions for students in educational opportunity programs. These programs are designed to recruit motivated low-income students who do not meet regular admission standards, and to provide them with special tutoring and other support services. Table 14 shows, for example, that the college students who were marginally or not college qualified according to the index were more likely to come from families with low income and low educational levels, and were more likely to come

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[26] The combined percentage for one and two sources was 12 percent for whites and 25 percent for blacks. The difference between blacks and the other minorities was not statistically significant. U.S. Department of Education, National Center for Education Statistics, 1992–93 National Postsecondary Student Aid Study (NPSAS:93), Data Analysis System.

[27] J. Owings, M. McMillen, and J. Burkett, in "Making the Cut: Who Meets Highly Selective College Entrance Criteria?", *Statistics in Brief* (Washington, D.C.: National Center for Education Statistics, 1995), discuss some of the other criteria and the effect of using several criteria jointly as opposed to using a single criterion. The study is limited to very highly qualified applicants.

Table 13—Percentage distribution of 1992 high school graduates according to the number of sources available for classification as "college qualified," by student background characteristics and enrollment status

	Sources available for college qualification index[1]			
	One	Two	Three[2]	Four or five[3]
	All 1992 high school graduates			
Total	9.0	9.8[4]	36.0	45.1
Race–ethnicity				
Asian/Pacific Islander	11.3	10.0	32.7	45.9
Hispanic regardless of race	12.7	11.2	43.0	33.2
Black, not of Hispanic origin	11.8	14.5	39.7	34.0
White, not of Hispanic origin	8.0	8.9	34.7	48.4
Family income				
Low (less than $25,000)	10.0	9.3[4]	43.9	36.8
Middle ($25,000–$74,999)	7.5	8.7[4]	32.6	51.2
High ($75,000 or more)	10.7	6.6[4]	27.1	55.7
Parents' highest education level				
High school graduate or less	8.4	11.6	46.7	33.4
Some college	8.6	9.1	35.1	47.2
College graduate	10.0	6.0	26.6	57.4
	All 1992 high school graduates who attended four-year colleges			
Total	9.1	4.5[4]	21.8	64.6
Race–ethnicity				
Asian/Pacific Islander	10.1	7.1	22.3	60.5
Hispanic regardless of race	13.9	1.7	24.5	59.9
Black, not of Hispanic origin	12.5	12.7	22.1	52.7
White, not of Hispanic origin	8.1	3.5	21.5	66.8
Family income				
Low (less than $25,000)	9.1	3.8[4]	22.0	65.1
Middle ($25,000–$74,999)	8.4	3.3[4]	18.8	69.6
High ($75,000 or more)	9.2	4.2[4]	25.0	61.6
Parents' highest education level				
High school graduate or less	7.4	4.4[4]	22.3	66.0
Some college	8.4	4.2[4]	19.3	68.1
College graduate	9.8	3.7[4]	21.9	64.6

[1] High school GPA, rank in class, NELS 1992 aptitude test, and SAT and ACT test scores.

[2] Those with three sources always include at least one standardized test score (NELS, SAT, or ACT).

[3] Those with four or more sources always include either the SAT or the ACT scores.

[4] The estimates for the family income subgroups are all lower than that for the total because of missing values for family income.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 14—Percentage distribution of all 1992 high school graduates who enrolled in a 4-year institution by 1994, according to 4-year college qualification,* by background characteristics

	Marginally or not qualified	Minimally qualified	Somewhat qualified	Highly qualified	Very highly qualified
Total	11.3	12.6	19.5	29.6	26.9
Race–ethnicity					
Asian/Pacific Islander	6.0	12.8	15.9	27.2	38.1
Hispanic regardless of race	17.7	18.2	19.8	23.2	21.1
Black, not of Hispanic origin	28.5	19.3	23.6	18.0	10.6
White, not of Hispanic origin	8.9	11.3	19.2	31.8	28.8
Family income					
Low (less than $25,000)	16.0	17.0	20.0	28.8	18.3
Middle ($25,000–$74,999)	11.1	11.9	19.5	31.0	26.5
High ($75,000 or more)	6.1	9.2	17.7	29.9	37.0
Parents' highest education level					
High school graduate or less	17.3	17.8	20.0	26.2	18.7
Some college	11.5	15.5	21.8	29.4	21.8
College graduate	8.6	8.8	17.3	31.9	33.4

*4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

from Hispanic or black families,[28] which both tend to have lower incomes and educational levels than white and Asian families.

Table 15 describes the proportions of all the students from the senior class of 1992 who were qualified to be admitted to a four-year institution according to this index. Among all 1992 high school graduates, nearly two-thirds (65 percent) appear to have been at least minimally qualified for admission to a four-year college or university (hereafter referred to as "college qualified"). There was a direct relationship between students' family income and their likelihood of being qualified for admission to a four-year institution: 53 percent of low-income students were college qualified compared to 68 percent of middle- and 86 percent of high-income students. The proportion of college-qualified students was also directly related to their parents' educational attainment.

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[28] The difference between blacks (28.5 percent) and Hispanics (17.7 percent) is not statistically significant.

Table 15—Percentage of all 1992 high school graduates qualified to attend a 4-year postsecondary institution and percentage distribution of their level of qualification, by background characteristics

	Total "college qualified"	College qualification index*			
		Minimally qualified	Somewhat qualified	Highly qualified	Very highly qualified
Total	64.5	25.7	24.7	28.2	21.4
Race–ethnicity					
Asian/Pacific Islander	72.7	20.0	20.6	27.8	31.6
Hispanic regardless of race	53.0	39.0	25.6	20.4	15.0
Black, not of Hispanic origin	46.9	35.7	29.8	21.0	13.5
White, not of Hispanic origin	68.2	23.7	24.3	29.7	22.3
Family income					
Low (less than $25,000)	52.5	35.6	24.4	25.9	14.0
Middle ($25,000–$74,999)	67.6	23.9	25.1	29.4	21.7
High ($75,000 or more)	85.9	13.4	21.4	31.4	33.8
Parents' highest education level					
High school graduate or less	47.1	40.3	24.2	22.2	13.4
Some college	64.3	28.2	27.7	27.4	16.7
College graduate	81.9	14.5	21.6	32.9	31.0

*4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Reflecting their higher income and parental education levels, Asians and whites were more likely than blacks and Hispanics to be qualified to attend a four-year postsecondary institution according to this index. Hispanics were more likely than Asians and whites to be no more than minimally qualified. The proportion of very highly qualified students was largest among Asians: 32 percent of Asians were in this category, compared to 22 percent of whites, 15 percent of Hispanics, and 14 percent of blacks.

The relationship between the four-year college qualification index levels and four-year college enrollment rates, as well as postsecondary enrollment rates in general, is displayed in table 16. Among those seniors classified as marginally or not qualified for regular four-year college admission, half entered postsecondary education, but only 15 percent enrolled in a four-year college or university. Among those seniors who were minimally qualified, three-fourths enrolled in some postsecondary education and 35 percent attended a four-year institution. With each higher level of academic qualification, the total proportion of students enrolled in postsecondary education increases,[29] largely because the proportion of students enrolled in four-year colleges and universities increases and the proportions enrolled in public two-year colleges decreases:[30] 56 percent of the somewhat qualified, 73 percent of the highly qualified, and 87 percent of the very highly qualified high school graduates enrolled in four-year institutions. The enrollment patterns by levels of the college qualification index are also illustrated in figure 3.

Table 16—Percentage distribution of all 1992 high school graduates, according to postsecondary attendance by 1994, by the 4-year college qualification index[1]

	No postsecondary education	Other less than 4-year institution[2]	Public 2-year institution	Any 4-year institution
Total	24.8	4.4	25.7	45.1
College qualification index[1]				
Marginally or not qualified	47.9	7.0	30.3	14.7
Minimally qualified	24.8	5.8	34.4	35.0
Somewhat qualified	14.0	2.6	27.8	55.6
Highly qualified	6.4	2.2	18.9	72.6
Very highly qualified	3.9	0.9	8.3	86.9

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Primarily private, for-profit vocational and private, not-for-profit 2-year institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

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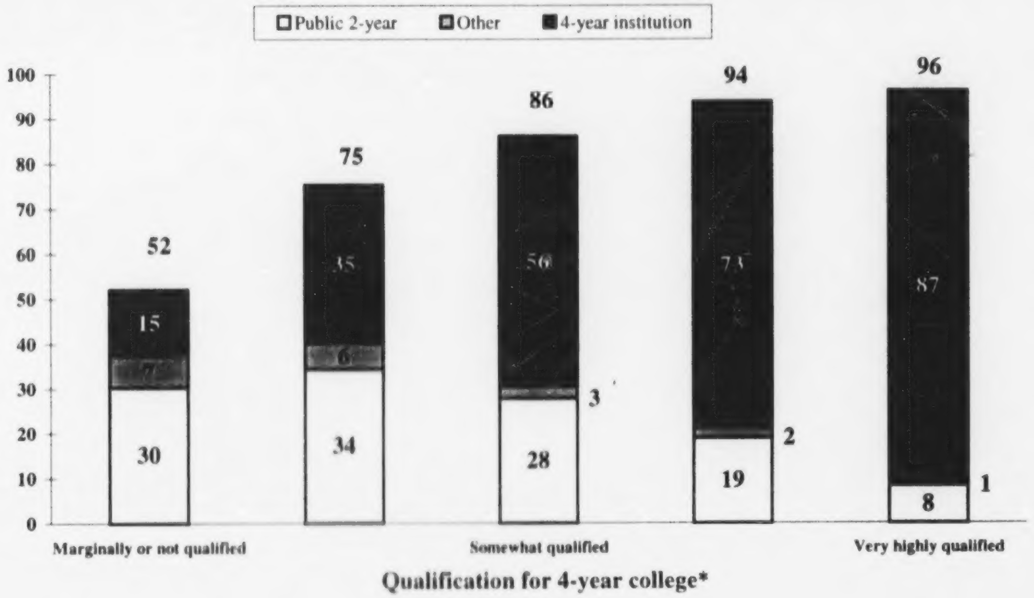
[29] With the exception of no difference between the "very highly" and "highly qualified."

[30] With the exception of no differences in public two-year enrollments between the "minimally" and "somewhat qualified."

Figure 3—Percentage of all 1992 high school graduates who enrolled in postsecondary education by 1994 according to type of institution attended, by 4-year college qualification index*



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*4-year college qualification index based on GPA, rank in class, NELS aptitude test, SAT and ACT scores, and academic coursework.

NOTE: Percentages may not sum to totals due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

EXPECTATIONS, PLANS, AND POSTSECONDARY ATTENDANCE OF COLLEGE-QUALIFIED STUDENTS

Had the educational expectations of the high school graduates who were college qualified in their senior year changed since the eighth grade? Recall that the overall proportion of high school graduates who expected to finish college declined slightly between the eighth grade and the senior year, from 73 percent to 71 percent (table 8). Table 17 compares the students' postsecondary expectations in these years again, but separates those students who were qualified to attend a four-year college in 1992 from those who were marginally or not qualified. Among those who were college qualified in their senior year, there had been no decline in the proportion who expected to finish college (83 percent in both years). Among those who were marginally or not qualified during their senior year, however, the proportion that expected to finish college had dropped from 52 percent during the eighth grade to 44 percent in the senior year. Instead, the expectations of these seniors had shifted toward achieving some postsecondary education (32 percent compared to 46 percent) rather than finishing college. This decline in college completion expectations was true only for white students, however (51 percent to 39 percent). Among the black, Hispanic, and Asian students who appear to have been marginally or not college qualified during their senior year, expectations were not significantly different between 1988 and 1992.

Expectations for finishing college did not decline from eighth to twelfth grade among any group of students who were college qualified as seniors. This was true regardless of students' family income, educational level, or racial–ethnic background. Therefore, the decline in expectations for the entire class was largely driven by a decline in expectations for those, primarily white, students who demonstrated a low level of academic aptitude and achievement in their senior year. Among four-year college-qualified students, on the other hand, expectations had been set by the eighth grade and did not change; in fact, the expectations of college-qualified low-income students appears to have increased slightly (69 to 74 percent), but there is not enough statistical evidence to conclude that they changed.

As shown in table 18, among all four-year college-qualified seniors who (in 1992) *expected* to finish college, 88 percent said that they *planned* to attend a four-year college. Long-term expectations and short-term plans for postsecondary education are based on different questions in

Table 17—Percentage distribution of 1992 high school graduates according to the highest level of education expected in 1988 and in 1992, and 4-year college qualification, by background characteristics

	Marginally or not college qualified[1] in 1992						College qualified[1] in 1992					
	Expectations in 1988			Expectations in 1992			Expectations in 1988			Expectations in 1992		
	No PSE[2]	Some PSE[2]	Finish college	No PSE[2]	Some PSE[2]	Finish college	No PSE[2]	Some PSE[2]	Finish college	No PSE[2]	Some PSE[2]	Finish college
Total	16.0	32.0	51.9	10.4	45.6	44.0	3.0	13.9	83.1	1.7	15.0	83.3
Race–ethnicity												
Asian/Pacific Islander	15.9	30.8	53.3	4.8	48.6	46.7	1.5	14.8	83.7	2.3	7.8	89.9
Hispanic regardless of race	18.1	31.0	50.9	7.0	42.3	50.7	3.4	21.1	75.5	2.8	18.9	78.3
Black, not of Hispanic origin	8.7	33.2	58.1	5.0	35.5	59.6	3.8	14.5	81.7	1.8	15.5	82.7
White, not of Hispanic origin	17.1	31.9	50.9	12.5	48.4	39.1	3.0	12.9	84.1	1.5	15.1	83.4
Family income												
Low (less than $25,000)	18.9	37.0	44.2	12.5	48.3	39.2	6.8	23.4	69.8	2.9	23.0	74.2
Middle ($25,000–$74,999)	14.2	30.5	55.3	9.0	45.3	45.7	2.1	13.2	84.8	1.2	14.3	84.4
High ($75,000 or more)	7.6	17.7	74.6	5.2	27.6	67.3	0.4	4.8	94.7	0.2	4.2	95.5
Parents' highest education level												
High school graduate or less	23.2	36.5	40.4	13.2	53.1	33.7	7.9	23.8	68.3	3.5	24.8	71.7
Some college	12.7	34.0	53.4	9.8	47.3	42.9	2.9	16.8	80.3	1.8	17.7	80.4
College graduate	5.3	16.2	78.5	4.9	23.6	71.5	0.7	6.2	93.2	0.3	6.8	92.9

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Postsecondary education.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 18—Percentage distribution of all college-qualified[1] 1992 high school graduates who in 1992 expected to finish college, according to plans for postsecondary attendance in 1992, by background characteristics

	No plans for PSE[2]	2-year college or trade school	4-year college
Total	0.1	11.5	88.4
Race–ethnicity			
Asian/Pacific Islander	0.0	9.2	90.8
Hispanic regardless of race	0.0	18.8	81.2
Black, not of Hispanic origin	0.0	7.7	92.3
White, not of Hispanic origin	0.2	11.1	88.7
Family income			
Low (less than $25,000)	0.1	12.2	87.7
Middle ($25,000–$74,999)	0.2	12.3	87.5
High ($75,000 or more)	0.0	6.8	93.2
Parents' highest education level			
High school graduate or less	0.1	14.1	85.8
Some college	0.2	14.5	85.3
College graduate	0.1	7.3	92.6

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Postsecondary education.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

the survey.[31] There were no differences in plans to attend a four-year college between low- and middle-income college-qualified students who expected to finish college, and both were less likely than their high-income counterparts to plan to do so. Hispanic students were also less likely to plan to attend a four-year college; instead, they were more likely to plan to attend a two-year college or trade school.

The postsecondary plans of all the college-qualified seniors are shown in table 19. Nearly 9 out of 10 (88 percent) of all college-qualified 1992 high school graduates indicated during their

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[31] Although the terms are similar, in this report "expectations" refers to one specific question in the NELS survey ("How far in school do you think you will get?") which was asked in 1988 and again in 1992, while "plans" refers to another question (asked only in 1992) about their plans immediately after high school.

Table 19—Percentage distribution of all college-qualified[1] 1992 high school graduates, according to plans for postsecondary attendance in 1992, by background characteristics

	Plans to continue education immediately after high school			Type of postsecondary institution planned to attend[2]	
	Yes	No	Don't know	4-year college	2-year college or trade school
Total	88.3	8.7	3.1	81.9	18.1
Race–ethnicity					
Asian/Pacific Islander	90.9	6.9	2.2	86.4	13.6
Hispanic regardless of race	86.0	8.0	6.0	76.5	23.5
Black, not of Hispanic origin	84.3	10.9	4.8	87.2	12.8
White, not of Hispanic origin	88.7	8.6	2.7	81.8	18.2
Family income					
Low (less than $25,000)	80.1	14.3	5.6	78.6	21.4
Middle ($25,000–$74,999)	89.9	7.7	2.3	80.4	19.6
High ($75,000 or more)	95.6	3.3	1.0	92.5	7.5
Parents' highest education level					
High school graduate or less	80.6	14.3	5.0	75.5	24.5
Some college	86.8	9.5	3.6	76.3	23.7
College graduate	94.0	4.6	1.4	90.5	9.5

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Among those college-qualified students who planned to continue their educations immediately after high school.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

senior year that they planned to continue their education immediately after high school, with no differences existing among racial–ethnic groups. Although 80 percent of college-qualified students from low-income families indicated that they planned to continue their education immediately after high school, they were less likely to plan to do so than middle-income (90 percent) and high-income (96 percent) students.

Among all college-qualified students who indicated that they did plan to continue their education after high school, 82 percent said they planned to attend a four-year institution. Among these, Hispanic students were less likely than black students to have planned to attend a four-year college (77 percent compared to 87 percent). There was no difference in the proportions of college-qualified students from low-income and middle-income families who planned to attend a four-year institution (79 and 80 percent), compared to over 90 percent of the high-income students.

The postsecondary enrollment patterns of the college-qualified students are shown in table 20. Among all students qualified for admission to some four-year institutions, 12 percent did not attend any postsecondary institution by 1994. Almost one-quarter attended a two-year public institution, and 62 percent attended a four-year institution. Among the college-qualified, low-income students were more likely not to enroll in postsecondary education than middle- and high-income students (22 percent compared to 10 and 4 percent), and Hispanic students were more likely not to enroll than whites and Asians (18 percent compared to 11 and 8 percent, respectively).[32]

Table 20—Percentage distribution of all college-qualified[1] 1992 high school graduates according to postsecondary enrollment by 1994 and type of institution attended, by background characteristics

	No postsecondary education	Other less than 4-year institution[2]	Public 2-year institution	Any 4-year institution
Total	12.3	2.9	22.7	62.0
Race–ethnicity				
Asian/Pacific Islander	7.8	1.7	22.3	68.1
Hispanic regardless of race	17.8	3.4	29.7	49.2
Black, not of Hispanic origin	18.0	3.2	14.5	64.2
White, not of Hispanic origin	11.4	3.0	22.8	62.8
Family income				
Low (less than $25,000)	22.3	4.3	21.2	52.2
Middle ($25,000–$74,999)	10.1	3.1	25.2	61.6
High ($75,000 or more)	3.6	1.4	11.9	83.1
Parents' highest education level				
High school graduate or less	23.2	4.1	27.0	45.7
Some college	14.0	2.9	26.9	56.1
College graduate	4.1	2.5	14.6	78.8

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Primarily private, for-profit vocational and private, not-for-profit 2-year institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

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[32] While there appear to be large differences between black students compared with whites, only the difference between blacks and Asians is statistically significant.

The four-year college enrollment patterns of students who were qualified to attend four-year colleges were still directly related to family income and parental education levels. Even though they were at least minimally qualified to attend a four-year college, just over half (52 percent) of the low-income students enrolled in a four-year college, compared to 62 percent of middle-income and 83 percent of high-income students. The four-year college enrollment rates of college-qualified black students were similar to those of whites (64 and 63 percent), but college-qualified Hispanics were less likely to enroll in a four-year college (49 percent) than any other racial–ethnic group of college-qualified high school graduates.

Table 21 displays the postsecondary enrollment patterns of the college-qualified seniors in a somewhat different way by focusing only on the distribution of those *who enrolled* by type of institution. Among those college-qualified students who did pursue postsecondary education, there were no differences between the proportions of low- and middle-income students who attended either a public two-year (27 and 28 percent) or any four-year college (67 and 69 percent). Similarly, among those who enrolled in postsecondary institutions, the proportion of black students attending four-year colleges was just as high as that of whites and Asians. Hispanic students who enrolled, however, were still more likely to attend a public two-year and were less likely to attend a four-year college than students from any other racial–ethnic group.[33]

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[33] K. Alexander et al. (1987) found that while holding academic qualification constant decreased differences in probabilities of four-year attendance between Hispanic, white, and black 1980 high school graduates who went to college, Hispanics were still slightly less likely to enroll in four-year institutions at all SES levels. K. Alexander et al., "Social Background and Academic Determinants of Two-Year Versus Four-Year College Attendance: Evidence From Two Cohorts a Decade Apart," *American Journal of Education* 96 (1987): 56–80.

Table 21—Percentage distribution of all college-qualified[1] 1992 high school graduates, according to enrollment in postsecondary education by 1994 and percentage distribution of those who enrolled according to type of institution attended, by background characteristics

	Total		Enrolled by 1994[3]		
	No postsecondary education	Enrolled by 1994	Other less than 4-year institution[2]	Public 2-year institution	Any 4-year institution
Total	12.3	87.7	3.4	25.9	70.8
Race–ethnicity					
Asian/Pacific Islander	7.8	92.2	1.8	24.2	73.9
Hispanic regardless of race	17.8	82.2	4.1	36.1	59.8
Black, not of Hispanic origin	18.0	82.0	4.0	17.7	78.4
White, not of Hispanic origin	11.4	88.6	3.3	25.7	71.0
Family income					
Low (less than $25,000)	22.3	77.7	5.6	27.3	67.2
Middle ($25,000–$74,999)	10.1	89.9	3.4	28.0	68.6
High ($75,000 or more)	3.6	96.4	1.5	12.4	86.2
Parents' highest education level					
High school graduate or less	23.2	76.8	5.4	35.2	59.5
Some college	14.0	86.0	3.4	31.4	65.3
College graduate	4.1	95.9	2.6	15.2	82.2

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Primarily private for-profit vocational and private not-for-profit 2-year institutions.

[3] Percentage distribution of the 87.7 percent who enrolled.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study 1988–94 (NELS:88), Data Analysis System.

STEPS TOWARD ATTENDING A FOUR-YEAR INSTITUTION

In order to attend a four-year college or university, students must, in addition to having the necessary academic preparation and levels of achievement to be admitted to a four-year institution, complete two steps: they must take a college entrance examination (usually the SAT or ACT) and submit an admissions application. The left panel of table 22 describes the proportions of college-qualified students who took either both steps, only one step, or neither step toward attending a four-year institution.

Among all college-qualified students, nearly three-quarters (73 percent) took both a college entrance exam and submitted an application to a four-year institution. The proportion of college-qualified students taking both of these steps was directly related to their family income: 62 percent of low-income students did so compared to 73 percent of middle-income and 91 percent of high-income students. College-qualified Hispanics, however, were less likely to take a college entrance examination and submit an application than students from any other racial–ethnic group.[34]

The right panel of table 22 focuses on those high school graduates who were both college qualified *and* planned to attend a four-year institution immediately after high school. Among this group, nearly 93 percent took both steps toward meeting their educational goals. There were still some income and racial–ethnic differences in the proportions of those who took both steps. The proportions of college-qualified seniors taking both steps toward four-year college admission was still directly related to income. Hispanics were still less likely to take both steps than Asians and whites, but among those who were both college qualified and planned to attend a four-year institution immediately after high school there was no longer any measurable difference between Hispanics and blacks.

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[34] There were no differences among Asians, whites, and blacks with the exception of Asians, who were slightly more likely than whites to take both steps.

Table 22—Percentage distribution of all college-qualified[1] 1992 high school graduates and those who planned to attend a 4-year institution immediately, according to the steps[2] taken toward admission to a 4-year institution, by background characteristics

	All college qualified				All college qualified who planned to attend a 4-year institution immediately			
	Took exam, applied	Took exam, did not apply	Did not take exam, applied	Did neither	Took exam, applied	Took exam, did not apply	Did not take exam, applied	Did neither
Total	72.6	14.9	1.1	11.4	93.2	5.2	0.8	0.9
Race–ethnicity								
Asian/Pacific Islander	80.1	11.6	0.6	7.8	94.4	4.6	0.4	0.6
Hispanic regardless of race	61.4	15.8	2.2	20.5	88.8	7.4	1.5	2.3
Black, not of Hispanic origin	74.4	8.0	3.4	14.1	92.3	3.9	2.5	1.4
White, not of Hispanic origin	73.2	15.5	0.8	10.5	93.5	5.1	0.6	0.8
Family income								
Low (less than $25,000)	61.5	17.2	2.2	19.2	87.9	7.7	2.4	2.1
Middle ($25,000–$74,999)	73.3	15.9	1.1	9.8	93.2	5.4	0.5	1.0
High ($75,000 or more)	90.7	6.5	0.1	2.7	97.6	2.2	0.1	0.1
Parents' highest education level								
High school graduate or less	58.1	18.3	2.1	21.5	88.8	7.1	2.2	1.8
Some college	67.2	18.7	1.4	12.7	91.0	7.0	1.0	1.0
College graduate	87.0	8.5	0.5	4.1	96.6	2.8	0.1	0.5

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking a college entrance examination (SAT or ACT), and applying for admission to a 4-year college or university.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 23—Percentage distribution of all college-qualified[1] 1992 high school graduates who took both steps[2] toward admission to a 4-year college according to postsecondary enrollment by 1994 and type of institution attended, by background characteristics

	No postsecondary education	Other less than 4-year institution[3]	Public 2-year institution	Any 4-year institution
Total	4.0	1.3	11.1	83.7
Race–ethnicity				
Asian/Pacific Islander	4.2	0.2	11.1	84.4
Hispanic regardless of race	8.9	1.0	13.0	77.2
Black, not of Hispanic origin	7.4	2.6	8.5	81.5
White, not of Hispanic origin	3.2	1.2	11.2	84.4
Family income				
Low (less than $25,000)	4.6	1.7	11.2	82.5
Middle ($25,000–$74,999)	4.1	1.4	12.5	82.0
High ($75,000 or more)	2.1	0.7	5.6	91.5
Parents' highest education level				
High school graduate or less	7.8	1.4	15.3	75.5
Some college	3.9	1.4	13.3	81.4
College graduate	2.4	1.1	6.9	89.6

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking a college entrance examination (SAT or ACT), and applying for admission to a 4-year college or university.

[3] Primarily private, for-profit vocational and private, not-for-profit 2-year institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

The postsecondary enrollment rates of those 1992 high school graduates who were college-qualified *and* took both steps toward attending a four-year institution are displayed in table 23. Only 4 percent of these students did not attend any postsecondary institution, 11 percent attended public two-year colleges, and 84 percent attended a four-year college or university. There was no difference in the four-year college enrollment rate of low-income and middle-income students (82 percent) who were college qualified and took both steps toward admission, and there was no measurable difference in the four-year college enrollment rates among students from various racial–ethnic groups.[35]

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[35] While there appear to be large racial–ethnic differences in the total proportions *not* enrolled, the differences are not statistically significant.

The small percentage of college-qualified seniors who took both steps toward attending a four-year institution and did not enroll in a postsecondary institution are excluded in the right panel of table 24. Among the 96 percent who did enroll, there were no differences in the proportion of low- and middle-income students who attended a four-year college or university (about 86 percent) as well as no differences among students from various racial–ethnic groups. If they enrolled in postsecondary education, between 85 and 88 percent of all college-qualified blacks, Hispanics, Asians, and whites who had taken both steps toward attending a four-year institution enrolled in a four-year institution within two years of high school graduation.

Although many of the differences in four-year college enrollment rates disappear among those students who are both college qualified and take both steps toward attending a four-year college, students whose parents have high incomes or college degrees are still the most likely to attend four-year institutions. Nevertheless, high school graduates whose parents have low levels of income and education are able to attend four-year colleges at the same rates as students from middle-income families, if they do what four-year colleges expect them to do. That is, *if* low-income students have an academic record and aptitude test scores which demonstrate even the minimal qualifications for admission to a four-year institution, and *if* they take a college entrance examination and *if* they submit an application for admission, the majority of low-income students do enroll in postsecondary education, and over 83 percent attend a four-year institution (figure 4). Similarly, those black and Hispanic students who are college qualified, take a college entrance examination, and apply for admission to a four-year college are just as likely to attend a four-year college or university as their white and Asian counterparts (figure 5).

Table 24—Percentage distribution of all college-qualified[1] 1992 high school graduates who took both steps[2] toward admission to a 4-year institution according to enrollment in postsecondary education by 1994 and percentage distribution of those who enrolled according to type of institution attended, by background characteristics

	Total		Enrolled by 1994[4]		
	No postsecondary education	Enrolled as of 1994	Other less than 4-year institution[3]	Public 2-year institution	Any 4-year institution
Total	4.0	96.0	1.3	11.5	87.2
Race–ethnicity					
Asian/Pacific Islander	4.2	95.8	0.3	11.6	88.1
Hispanic regardless of race	8.9	91.1	1.0	14.3	84.7
Black, not of Hispanic origin	7.4	92.6	2.8	9.2	88.0
White, not of Hispanic origin	3.2	96.8	1.3	11.6	87.2
Family income					
Low (less than $25,000)	4.6	95.4	1.8	11.7	86.5
Middle ($25,000–$74,999)	4.1	95.9	1.5	13.0	85.5
High ($75,000 or more)	2.1	97.9	0.7	5.7	93.5
Parents' highest education level					
High school graduate or less	7.8	92.2	1.5	16.6	81.9
Some college	3.9	96.1	1.4	13.8	84.8
College graduate	2.4	97.6	1.1	7.0	91.8

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Took college entrance examinations and applied for admission to a 4-year college.

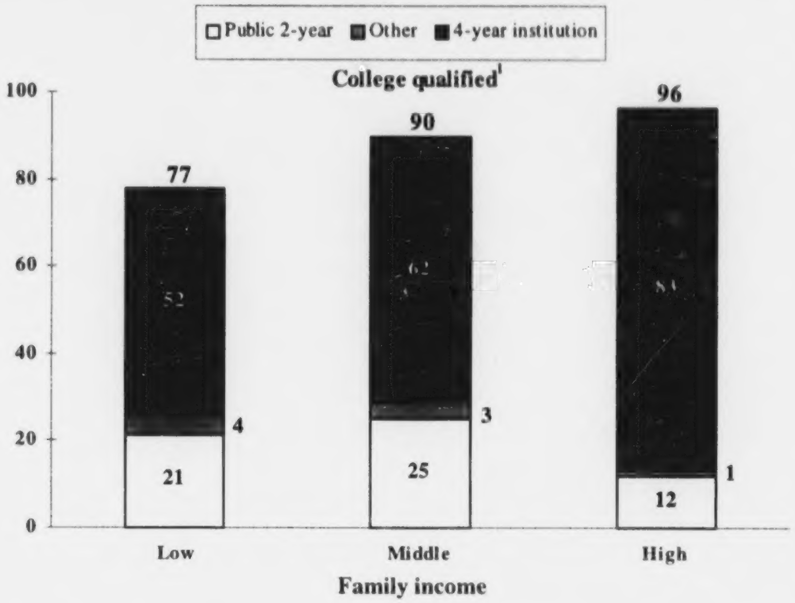
[3] Primarily private, for-profit vocational and private, not-for-profit 2-year institutions.

[4] Excludes those who did not enter postsecondary education.

NOTE: Percentages may not sum to 100 due to rounding.

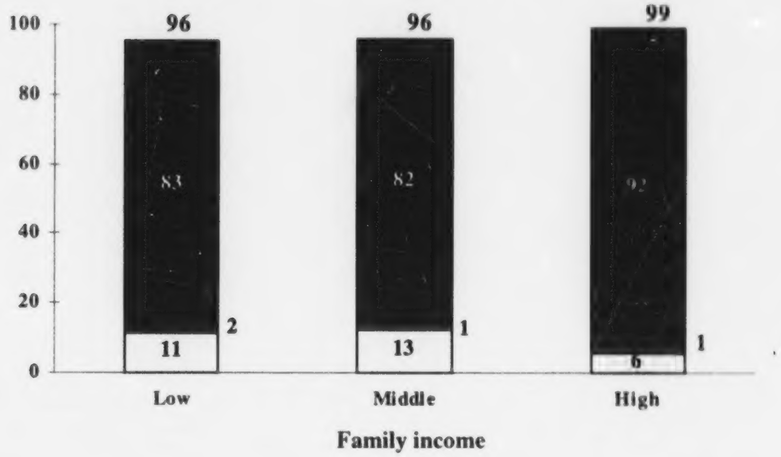
SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Figure 4—Percentage of all college-qualified 1992 high school graduates who enrolled in postsecondary education by 1994 compared with those who took both steps toward admission to a 4-year institution, according to the type of institution attended by 1994, by family income



College qualified[1]

College qualified and took both steps toward admission[2]



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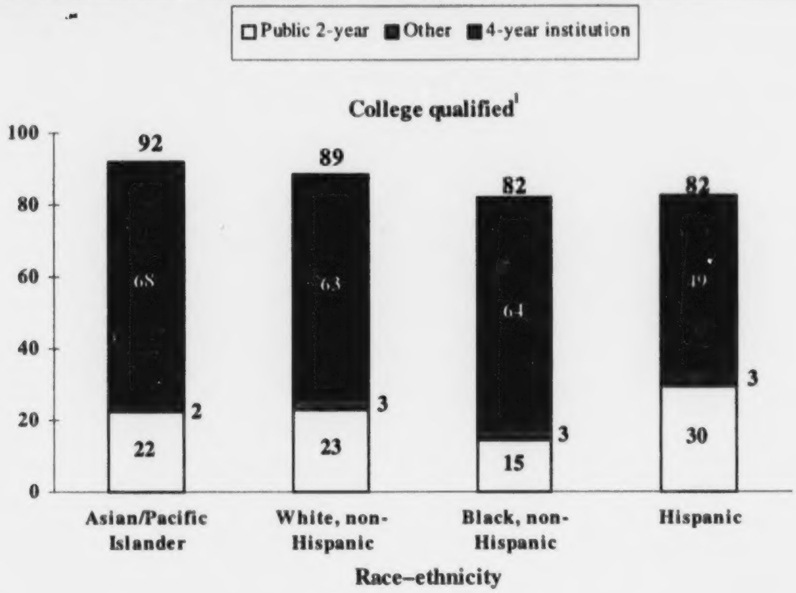
[1] 4-year college qualification index based on GPA, rank in class, NELS aptitude test, SAT and ACT scores, and academic coursework.

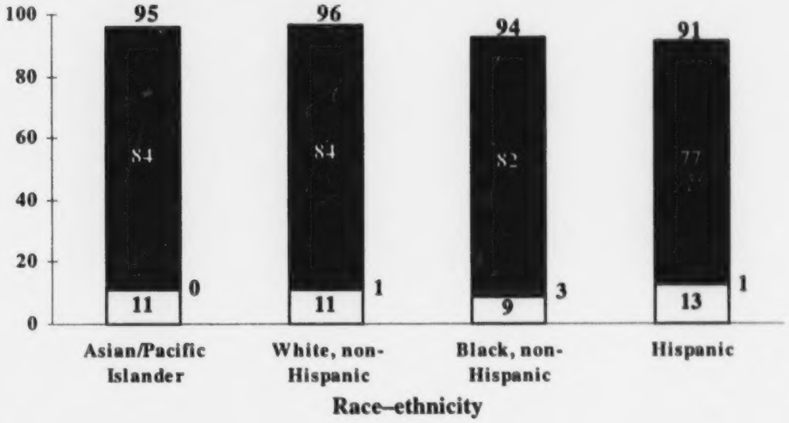
[2] Taking college entrance exam and applying for admission to a 4-year institution.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Figure 5—Percentage of all college-qualified 1992 high school graduates who enrolled in postsecondary education by 1994 compared with those who took both steps toward admission to a 4-year institution, according to the type of institution attended by 1994, by race–ethnicity



College qualified and took both steps toward admission[2]



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[1] 4-year college qualification index based on GPA, rank in class, NELS aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking college entrance exam and applying for admission to a 4-year institution.

[3] This estimate is less than 0.5.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

CHOICE OF INSTITUTIONS BY COLLEGE-QUALIFIED APPLICANTS WHO ARE ACCEPTED FOR ADMISSION

College-qualified students who take the college entrance examinations have a choice of where to apply, but they have a choice of where to enroll only if they are accepted for admission by a four-year institution. In the NELS:88 survey, students were asked to name two of the institutions to which they applied and whether they were accepted. Table 25 compares the percentage of college-qualified students who applied to, were accepted by, and enrolled in private and public four-year institutions.[36] Almost half (45 percent) of the college-qualified students who took both steps toward admission applied to at least one private four-year institution, and three-quarters (77 percent) applied to at least one public four-year institution. Eventually 29 percent enrolled in a private and 55 percent enrolled in a public four-year institution.

Application rates of college-qualified students to private four-year institutions were directly related to family income: nearly 60 percent of students from high-income families applied to at least one private four-year institution, compared to 43 percent of middle-income and 38 percent of low-income students. Private college application rates were highest for the children of college graduates (55 percent), but were about the same for both groups of those whose parents had no 4-year degree (38 and 39 percent). Over half of the college-qualified Asian students (52 percent) had applied to at least one private four-year institution, compared with 37 percent of the college-qualified Hispanics.

Reflecting the differences in application rates, enrollment in private four-year colleges and universities was also directly related to family income, with 41 percent of high-income students enrolling, compared to 27 percent of middle-income and 22 percent of low-income college-qualified students who had taken both steps toward admission. Also reflecting the application rates, students whose parents were college graduates had higher private college enrollment rates (37 percent), but there was no difference in the private college enrollment rates of those whose parents had some college education compared to those who had no more than a high school education (22 and 23 percent). Private four-year college application and enrollment rates represent one of the few instances in this study where a direct relationship to family income levels is not also reflected in a direct relationship to parental education levels.

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[36] Applications to public 2-year colleges and other less-than-4-year institutions were not considered relevant for this analysis. Nearly one quarter (22 percent) applied to both public and private 4-year institutions. U.S. Department of Education, National Center for Education Statistics, National Educational Longitudinal Study: 1988–1994 (NELS:88), Data Analysis System.

Table 25—Percentage of college-qualified[1] 1992 high school graduates who took both steps[2] toward admission to a 4-year institution according to their application, acceptance, and attendance at private not-for-profit and public 4-year institutions, by background characteristics

	Applied to a private 4-year[3]	Accepted to a private 4-year[3]	Attended a private 4-year	Applied to a public 4-year[3]	Accepted to a public 4-year[3]	Attended a public 4-year
Total	45.3	37.9	28.8	76.6	67.5	54.9
Race–ethnicity						
Asian/Pacific Islander	52.4	43.8	36.6	72.0	61.9	47.8
Hispanic regardless of race	37.3	30.7	20.8	84.0	73.0	56.3
Black, not of Hispanic origin	48.1	35.8	26.0	82.7	70.1	55.5
White, not of Hispanic origin	45.1	38.3	29.2	75.7	67.3	55.2
Family income						
Low (less than $25,000)	37.5	30.5	22.1	82.1	73.5	60.4
Middle ($25,000–$74,999)	43.1	35.9	27.2	77.7	68.2	54.9
High ($75,000 or more)	59.2	51.4	40.9	66.8	60.4	50.6
Parents' highest education level						
High school graduate or less	37.5	31.0	22.1	80.6	69.2	53.4
Some college	38.8	32.0	22.9	80.8	70.7	58.6
College graduate	54.5	46.7	37.4	70.7	64.0	52.2

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking college entrance examinations and applying for admission to a 4-year college.

[3] Students who applied to both public and private institutions are included in both categories.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Given the large difference in the average tuition between public and private four-year colleges, it is not surprising that the application rates at private four-year institutions are directly related to family income. Low-income students and parents are undoubtedly aware that private college tuition is much higher. However, they may not be aware that financial aid can substantially reduce the difference in the actual net cost to the family unless the student has applied and been accepted, since the financial aid award offers are typically sent at the same time as the letters of acceptance. That is, the real effect of financial aid on college choice can be appropriately evaluated only by examining the behavior of those students who have been accepted for admission at four-year colleges, because they are the only ones who know how much financial aid has been awarded and can therefore actually compare the net costs at various institutions.

Table 26 shows where the students who were *accepted* to four-year colleges chose to enroll. Among the students who were accepted to any four-year institution, 89 percent enrolled in one. There were no differences in the four-year college enrollment rates of those who had been accepted among racial–ethnic groups or between low- and middle-income students. High-income students, however, were somewhat more likely to enroll in a four-year institution compared with low- and middle-income students (93 percent compared to 88 percent). Among students who were accepted to private four-year institutions, over three-quarters (76 percent) enrolled in one, 16 percent enrolled in a public four-year institution, and 6 percent in a less-than-four-year institution. For these students, there were no measurable differences in the choice of attending either a less-than-4-year, private four-year, or public four-year institution by family income, parental education, or race–ethnicity. Similarly, among students who were accepted to a public four-year institution, 81 percent enrolled in one, 8 percent enrolled in a private four-year institution, and 9 percent attended a less-than-four-year institution. There were also no differences in these enrollment choices by family income, parental education, or race–ethnicity.

In summary, low-income students who have been accepted to public four-year colleges and universities or those who have been accepted to private four-year colleges and universities are just as likely to enroll in them as were middle- and high-income students. There is also no difference in the enrollment rates of blacks, Hispanics, Asians, or whites who have been accepted to four-year public or private colleges and universities.

Table 26—Percentage distribution of postsecondary attendance of college-qualified[1] 1992 high school graduates who took both steps[2] toward admission to a 4-year institution, and were accepted for admission to at least one private or at least one public 4-year institution, by background characteristics

	Accepted to any 4-year			Accepted to private 4-year				Accepted to public 4-year			
	Attended a 4-year	Attended less-than-4-year	No PSE[3]	Attended private 4-year	Attended public 4-year	Attended less-than-4-year	No PSE[3]	Attended public 4-year	Attended private 4-year	Attended less-than-4-year	No PSE[3]
Total	89.4	8.3	2.3	76.4	16.3[4]	5.8	1.6	80.9	7.6	9.0	2.5
Race–ethnicity											
Asian/Pacific Islander	89.6	6.7	3.6	82.9	10.2	2.8	4.1	77.8	9.3	9.5	3.4
Hispanic regardless of race	84.6	9.9	5.6	71.1	21.5	6.1	1.2	77.6	4.9	11.1	6.5
Black, not of Hispanic origin	90.5	8.0	1.5	73.4	15.7	9.6	1.2	79.6	10.6	8.1	1.7
White, not of Hispanic origin	89.7	8.3	2.0	76.6	16.4	5.6	1.4	81.4	7.5	9.0	2.1
Family income											
Low (less than $25,000)	88.1	8.9	3.0	74.1	14.2[4]	9.9	1.8	82.2	5.5	9.1	3.2
Middle ($25,000–$74,999)	88.2	9.5	2.2	75.7	16.2[4]	6.4	1.6	80.2	7.4	10.1	2.3
High ($75,000 or more)	93.3	4.9	1.8	80.3	15.4[4]	2.8	1.6	82.3	9.8	5.9	2.0
Parents' highest education level											
High school graduate or less	84.3	12.4	3.3	73.1	13.2	12.3	1.4	77.5	6.0	12.8	3.7
Some college	87.9	9.7	2.4	71.5	18.2	8.0	2.3	82.5	5.5	9.6	2.4
College graduate	92.5	5.8	1.7	80.5	15.5	2.8	1.2	80.7	10.2	7.1	1.9

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking college entrance examinations and applying for admission to a 4-year college.

[3] Postsecondary education.

[4] The estimates for the family income subgroups are all lower than that for the total because of missing values for family income.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

FINANCIAL CONCERNS, INFORMATION, AND TAKING THE STEPS TO ATTEND A FOUR-YEAR COLLEGE

A major finding of this study is that the differences in the four-year college enrollment rates between college-qualified low-income and middle-income students, as well as those among the college-qualified students in the various racial–ethnic groups, are eliminated among those who take both steps toward four-year college admission. The NELS survey includes some data which may help explain why some students are less likely to take the necessary steps. These include the responses of the students and their parents to questions about college affordability and to questions about the financial aid information they had available.

In the spring of 1992, the graduating high school seniors who indicated they were planning to continue their education and their parents were asked a number of questions about the importance of college costs and financial aid in choosing a college and about their sources of financial aid information.[37] Tables 27 through 29 compare the responses to some of these questions by the college-qualified seniors and their parents.

Table 27 shows the percentage of 1992 college-qualified seniors and their parents who demonstrated that they were very concerned about college affordability by indicating that both the availability of financial aid and total college costs were "very important" in choosing an institution to attend, or that one was "very important" and the other "somewhat important." Low-income students and their parents were more likely to be very concerned about financial aid and college costs in choosing a college to attend than their middle-income counterparts, and middle-income students and parents were more concerned than those from high-income families. In low-income families, the parents were more likely to be concerned about college affordability than their children (79 percent compared to 69 percent). Both black and Hispanic students and parents were more likely to be concerned about affordability than their Asian and white counterparts. In Hispanic families, the parents were also more likely to be concerned about college affordability than their children (71 percent compared to 56 percent), in contrast to black families, where the parents and the students were equally concerned about meeting college costs (70 percent of parents and 74 percent of students). One important difference between Hispanic and black high school seniors is that black students are much more concerned about college affordability.

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[37] Most of the students who planned to attend college would have already applied and taken the entrance exams at this point.

Table 27—Percentage of all college-qualified[1] 1992 high school graduates and their parents who were very concerned[2] about college costs and availability of financial aid, by background characteristics

	Students[3]	Parents
Total	45.4	50.0
Race–ethnicity		
Asian or Pacific Islander	44.1	48.4
Hispanic regardless of race	55.9	71.3
Black, not of Hispanic origin	74.0	69.8
White, not of Hispanic origin	41.9	46.5
Family income		
Low (less than $25,000)	68.7	78.6
Middle ($25,000–$74,999)	47.1	52.7
High ($75,000 or more)	19.7	16.2
Parents' highest education level		
High school graduate or less	60.3	72.1
Some college	51.5	56.6
College graduate	34.3	36.2

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Rated both the availability of financial aid and total college costs as "very important" in choosing an institution to attend, or rated one as "very important" and the other "somewhat important."

[3] Includes only those students whose parents were also interviewed.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 28 shows the proportions of 1992 high school graduates and their parents who had read financial aid information from the U.S. Department of Education or from postsecondary institutions by their senior year of high school. Parents were much more likely to have read information from both sources than the students. Low-income parents were just as likely to have read information from two sources as middle-income parents (54 and 56 percent), but low-income students were *more* likely to have obtained financial aid information from both sources than their middle-income counterparts.

Table 28—Percentage distribution of college-qualified[1] 1992 high school graduates and their parents, according to the number of sources of information read about financial aid[2], by background characteristics

	Students			Parents		
	None	One	Two	None	One	Two
Total	43.0	34.6	22.3	12.9	33.6	53.5
Race–ethnicity						
Asian/Pacific Islander	43.6	34.7	21.7	23.4	33.4	43.1
Hispanic regardless of race	39.8	33.9	26.2	20.3	27.2	52.5
Black, not of Hispanic origin	32.6	34.2	33.2	11.6	33.3	55.1
White, not of Hispanic origin	44.2	34.8	21.0	12.0	34.1	53.8
Family income						
Low (less than $25,000)	34.8	35.5	29.7	15.7	30.6	53.7
Middle ($25,000–$74,999)	41.0	36.0	23.0	11.6	32.1	56.3
High ($75,000 or more)	53.9	32.6	13.5	15.3	41.0	43.7
Parents' highest education level						
High school graduate or less	37.4	37.7	25.0	17.9	29.2	52.8
Some college	41.2	35.4	23.5	11.8	32.4	55.8
College graduate	45.7	33.8	20.5	12.2	36.4	51.4

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Information from the U.S. Department of Education or from postsecondary institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 29 shows the proportion of college-qualified students and their parents who obtained information about financial aid from teachers and guidance counselors, college representatives, loan officers, and other knowledgeable people. Low-income students were more likely to have discussed financial aid with a high school teacher or guidance counselor (72 percent) and with college representatives (49 percent) than middle- or high-income students. Black students were also more likely to have discussed financial aid with teachers and counselors (77 percent) or college representatives (57 percent) than students from other racial–ethnic groups. There were no differences in the proportions of low-, middle-, and high-income parents who spoke to teachers and counselors, but a larger proportion of low- and middle-income parents spoke with college representatives about financial aid, while a larger percentage of middle-income parents had spoken to a loan officer at a bank.

Table 29—Percentage of college-qualified* 1992 high school graduates and their parents who spoke to others to learn about financial aid, according to the type of person spoken to, by background characteristics

	Students				Parents			
	Teacher or high school guidance counselor	College rep.	Loan officer at a bank	A knowledgeable adult	Teacher or high school guidance counselor	College rep.	Loan officer at a bank	Another person
Total	61.1	43.1	4.7	66.7	55.0	57.3	25.7	64.2
Race–ethnicity								
Asian/Pacific Islander	59.3	39.2	3.0	57.9	52.2	36.1	17.5	61.1
Hispanic regardless of race	63.8	46.6	2.2	69.4	48.1	53.7	18.0	59.1
Black, not of Hispanic origin	77.3	56.9	8.1	79.4	60.1	59.0	21.5	72.6
White, not of Hispanic origin	59.6	41.8	4.8	66.0	55.1	58.4	27.1	63.8
Family income								
Low (less than $25,000)	72.1	49.0	4.7	72.2	55.3	56.9	18.0	64.3
Middle ($25,000–$74,999)	62.7	45.1	4.8	69.1	55.0	59.8	29.3	64.3
High ($75,000 or more)	46.9	34.0	3.4	55.1	53.3	48.1	21.5	61.3
Parents' highest education level								
High school graduate or less	67.2	47.7	4.7	66.0	51.3	52.6	22.3	58.2
Some college	65.4	44.6	4.8	68.4	55.2	59.6	25.3	64.8
College graduate	55.0	40.8	4.1	65.3	56.4	57.0	27.2	65.9

*4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

In summary, low-income, black, and Hispanic parents of college-qualified seniors were very concerned about costs and the availability of financial aid in choosing a college; however, among these three groups only the black students were as concerned as their parents. College-qualified low-income students were more likely than their middle-income counterparts to read information and speak to teachers, guidance counselors, and college representatives about financial aid. Low-income parents, however, apparently did not have any more information about financial aid than middle-income parents. College-qualified black students were not only more concerned about college affordability than Hispanic students, they were also more likely to have discussed financial aid with teachers, guidance counselors, and college representatives.

Whether taking the steps toward attending a four-year institution is related to concerns about college affordability and information about financial aid is examined in tables 30 through 32. These tables focus on the college-qualified seniors from low-income, middle-income, Hispanic, and black backgrounds, which are the groups that are most concerned about college affordability as discussed above.

Table 30 examines the relationship between concerns about college affordability and taking both steps toward attending a four-year college. It shows the percentage of college-qualified students who took both steps, comparing those students and parents who were very concerned about affordability to those who were less than very concerned. The difference in the degree of concern expressed about college affordability by students and parents from low- and middle-income and black and Hispanic families was not related to differences in the proportions of students taking both steps towards attending a four-year institution. However, because the affordability questions were asked only of those who planned to attend postsecondary education, this result does not address the issue of whether cost concerns had discouraged students from planning to go to college in the first place.

Table 31 examines the relationship of taking both steps to the number of sources of information read about financial aid. All low-and middle-income, black, and Hispanic students who read information about financial aid from one or more sources were more likely to take both steps toward attending a four-year institution than those who did not read any information.[38] For example, 48 percent of college-qualified low-income students who did not read any information on financial aid took both steps, compared to over 70 percent who obtained information from one or two sources.

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[38] The exception to this is no difference between black students who read nothing compared with those who read two sources. Although the difference appears large, the estimates are not significantly different.

Table 30—Percentage distribution of college-qualified[1] 1992 high school graduates according to the number of steps[2] taken toward attending a 4-year institution, by student and parent concerns about costs and availability of financial aid in choosing a college to attend, by selected categories of income and racial–ethnic background

	Took exam and applied	One step	Did neither
Total[3]	81.1	13.4	5.5
Student concerns[3]			
Low income			
Very concerned[4]	72.5	18.4	9.1
Less than very concerned[5]	77.5	12.7	9.8
Middle income			
Very concerned	81.8	14.5	3.6
Less than very concerned	81.0	14.0	5.0
Black, non-Hispanic			
Very concerned	84.5	9.1	6.4
Less than very concerned	84.8	12.6	2.6
Hispanic			
Very concerned	72.0	15.0	13.0
Less than very concerned	79.4	12.6	8.0
Parent concerns			
Low income			
Very concerned	72.5	16.3	11.2
Less than very concerned	76.7	16.0	7.3
Middle income			
Very concerned	80.6	14.9	4.5
Less than very concerned	81.3	13.9	4.8
Black, non-Hispanic			
Very concerned	80.9	11.2	7.9
Less than very concerned	84.6	10.4	5.1
Hispanic			
Very concerned	75.0	13.0	12.0
Less than very concerned	73.0	17.5	9.5

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Takes college entrance examinations and applying for admission to a 4-year college.

[3] Includes only those students whose parents were also asked these questions.

[4] Rated both the availability of financial aid and total college costs as "very important" in choosing an institution to attend, "or one as very important" and the other as "somewhat important."

[5] Other combination of responses.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 31—Percentage distribution of college-qualified[1] 1992 high school graduates according to the number of steps[2] taken toward attending a 4-year institution, by number of sources of information on financial aid read by students and parents, by selected categories of income and racial–ethnic background

	Took exam and applied	One step	Did neither
Total[3]	72.6	16.1	11.4
Number of sources read by students[3]			
Low income			
None	47.8	25.4	26.8
One	71.2	15.8	13.0
Two	73.4	17.4	9.3
Middle income			
None	64.6	21.6	13.8
One	81.4	13.8	4.8
Two	86.6	10.8	2.7
Black, non-Hispanic			
None	67.0	12.4	20.5
One	84.1	7.6	8.3
Two	80.7	12.4	6.8
Hispanic			
None	53.6	18.1	28.4
One	68.8	16.4	14.8
Two	76.9	15.1	8.0
Number of sources read by parents			
Low income			
None	65.3	21.5	13.2
One	61.7	17.8	20.5
Two	76.4	15.4	8.2
Middle income			
None	69.2	18.4	12.4
One	74.8	16.8	8.5
Two	85.3	11.9	2.8
Black, non-Hispanic			
None	78.3	9.6	12.1
One	71.2	13.5	15.4
Two	82.6	11.2	6.2
Hispanic			
None	67.9	19.1	13.0
One	58.8	24.6	16.6
Two	81.3	12.3	6.4

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking college entrance examinations and applying for admission to a 4-year college.

[3] Includes students whose parents were not interviewed.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Similarly, as shown in table 32, low- and middle-income students who spoke with at least one person about financial aid were more likely to have taken both steps toward attending a four-year institution than those who did not speak with anyone. For example, 35 percent of low-income students who did not talk with anyone about financial aid applied to a four-year college and took a college entrance examination, compared to 52 percent who talked with one person, 67 percent who talked with two, and 75 percent who talked with three or more people. Among Hispanic and black students, those who spoke with two or more people were also more likely to take both steps toward attending a four-year institution than those who had spoken with no one.[39]

In summary, the more sources of information they had obtained, and the more people with whom they had discussed financial aid, the more likely that college-qualified low- and middle-income, black, and Hispanic students would have taken the college entrance exams and applied for admission to a four-year college.[40] Although there is a positive relationship between getting information about financial aid and taking the steps toward attending college, it cannot be concluded that there is a causal relationship. That is, it may be that students who have already decided to go to college seek out more information about financial aid, or it may be that those who get more information are more likely to take the steps toward going to college.

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[39] Although the difference in this proportion between Hispanic students who spoke with no one and those who spoke with one person appears large, these estimates are associated with large standard errors and the difference is not statistically significant.

[40] The importance of information for low-income students has recently been shown in J. King, *The Decision to Go to College* (Washington, D.C.: The College Board, 1996).

Table 32—Percentage distribution of college-qualified[1] 1992 high school graduates according to the number of steps[2] toward attending a 4-year institution, by number of people spoken to about financial aid by students and parents, by selected categories of income and racial–ethnic background

	Took exam and applied	One step	Did neither
Total[3]	72.6	16.1	11.4
Number of people spoken to by students[3]			
Low income			
None	34.7	24.1	41.2
One	51.8	25.7	22.5
Two	67.3	19.8	12.9
Three–four	75.2	15.1	9.7
Middle-income			
None	53.6	27.8	18.7
One	73.6	16.4	10.0
Two	78.0	16.1	5.9
Three–four	86.1	10.7	3.2
Black, non-Hispanic			
None	48.2	11.8	40.0
One	75.2	13.1	11.7
Two	82.8	10.2	7.0
Three–four	79.6	10.0	10.4
Hispanic			
None	34.0	23.4	42.6
One	52.1	23.3	24.6
Two	71.7	13.3	15.0
Three–four	80.7	12.8	6.4
Number of people spoken to by parents			
Low income			
None	58.2	22.8	19.0
One	62.7	17.8	19.4
Two	71.0	16.7	12.3
Three–four	77.4	15.9	6.7
Middle-income			
None	60.8	19.0	20.2
One	74.6	18.9	6.5
Two	79.9	15.1	5.0
Three–four	87.9	10.0	2.1
Black, non-Hispanic			
None	—	—	—
One	69.5	11.7	18.8
Two	78.7	13.4	7.9
Three–four	84.6	11.8	3.7
Hispanic			
None	63.7	26.3	10.0
One	67.1	18.8	14.1
Two	67.0	20.5	12.5
Three–four	85.9	8.4	5.7

—Sample size too small for a reliable estimate.

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking college entrance examinations and applying for admission to a 4-year college.

[3] Includes students whose parents were not interviewed.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

ATTENDANCE PATTERNS OF SENIORS MARGINALLY OR NOT QUALIFIED FOR REGULAR FOUR-YEAR COLLEGE ADMISSION

According to the college qualification index used in this analysis, approximately one-third of the 1992 high school graduates were not academically prepared to attend a four-year college, and they were not included in most of the analyses above. The postsecondary attendance patterns of the graduating seniors who appear to have been only marginally or not qualified to attend four-year colleges are shown in table 33.

Table 33—Percentage distribution of all 1992 high school graduates who were marginally or not college qualified,[1] according to postsecondary enrollment by 1994 and type of institution attended, by background characteristics

	No postsecondary education	Other less than 4-year institution[2]	Public 2-year institution	Any 4-year institution
Total	47.9	7.0	30.3	14.7
Race–ethnicity				
Asian/Pacific Islander	30.6	10.2	46.4	12.7
Hispanic regardless of race	42.2	7.2	38.5	12.1
Black, not of Hispanic origin	40.3	8.1	28.8	22.7
White, not of Hispanic origin	51.4	6.7	28.4	13.5
Family income				
Low (less than $25,000)	53.4	6.8	28.5	11.3
Middle ($25,000–$74,999)	43.2	6.6	33.8	16.5
High ($75,000 or more)	30.1	9.1	27.5	33.3
Parents' highest education level				
High school graduate or less	58.8	7.5	25.1	8.6
Some college	44.5	6.7	35.3	13.5
College graduate	23.1	5.9	36.3	34.8

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Primarily private for-profit vocational and private not-for-profit two-year institutions.

NOTE: Percentages may not sum to 100 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Half (48 percent) of all the marginally or unqualified seniors did not attend any postsecondary institution within two years of high school graduation. Not enrolling was directly related to family income and parental education levels. Over half (53 percent) of the low-income seniors did not enroll anywhere, compared with 43 percent of the middle- and 30 percent of the high-income unqualified seniors. Marginally and unqualified white seniors were more likely *not* to attend postsecondary education within two years of high school graduation than any of the marginally or unqualified seniors from minority groups. This is consistent with the earlier finding that the educational expectations of minority students, qualified or not, had not declined between the eighth grade and their senior year, but they had declined for marginally or unqualified white seniors.

Among those who were marginally or not college qualified, 30 percent enrolled in two-year public institutions; 7 percent enrolled in private for-profit or not-for-profit institutions offering programs of less than four years; and 15 percent enrolled in four-year institutions. For this group, four-year college enrollment rates were directly related to family income and parental education, a typical pattern observed throughout this report. The marginally qualified seniors whose parents had high incomes or college degrees were three times as likely to have been enrolled in four-year colleges than those whose parents had low incomes or no more than a high school education. The proportions of marginally qualified Asians, whites, and Hispanics enrolled in four-year colleges were similar (about 13 percent). The proportion of black seniors who did not meet the minimum criteria of the college qualification index who were enrolled in four-year colleges (23 percent) was greater than the proportion of comparable whites and Hispanics. Again, it is important to note that among the students who appear to be only marginally qualified, those who did enroll in four-year colleges were more likely to have data missing for the college qualification index than those who did not enroll in a four-year college, and most of the average scores for the marginally qualified who did enroll were about the same as the minimally qualified students.[41] In particular, black students who enrolled had fewer sources available for the qualification index than whites.[42]

Nearly one-third of the seniors who were marginally or not academically qualified for four-year colleges did attend two-year public community colleges. The pattern seen frequently throughout this report, that Hispanics had higher public two-year college enrollment rates than whites (39 percent compared to 28 percent), is repeated. What is not typical is that Asians also had much higher public two-year college enrollment rates than whites. Nearly half (46 percent) of the Asian seniors who were marginally or not qualified for four-year colleges attended public two-year colleges, which is consistent with the high postsecondary enrollment rates of college-qualified Asians.

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[41] See table 11 and table 12.

[42] See table 13.

In summary, even among those high school seniors who are not adequately prepared for regular admission to a four-year college, many of the same patterns which were observed among the college-qualified seniors are evident. Postsecondary enrollment in general, and four-year college enrollment in particular, is directly related to family income and education. Hispanics are more likely to go to community colleges, in contrast to blacks, who are more likely to go to four-year colleges than Hispanics.

A MULTIVARIATE ANALYSIS OF TWO-YEAR PUBLIC AND FOUR-YEAR COLLEGE ENROLLMENT RATES

In examining access to postsecondary education, this report has focused primarily on the factors associated with the relatively low four-year college enrollment rates of Hispanic, black, and low-income graduating high school seniors. Two of the most important factors were found to be that these groups were less likely to be well prepared academically, and among those who were qualified to attend a four-year college, low-income and Hispanic (but not black) students were less likely to take the college entrance examinations and apply for admission, which are the two steps required for acceptance to and enrollment in a four-year college or university. The analysis has therefore been focused on exploring the relationship of family income, parental education, and race–ethnicity to four-year college qualification and taking the steps toward four-year college admission, and the relationship of these two intervening variables to enrollment patterns.

To estimate the effect of a single one of these variables, the effects of the other related variables must be controlled, which requires a multivariate analysis. Two weighted least squares regression models were used to estimate how much each of the student background characteristics variables affected postsecondary enrollment, while controlling for college qualification and taking both steps toward four-year college admission, as well as the other background characteristics.

One model examines community college enrollments; the dependent variable is the proportion of 1992 high school graduates who first enrolled in a two-year public institution. A second model focuses on four-year college and university enrollments; the dependent variable is the proportion of 1992 high school graduates who first enrolled in a either a private or a public four-year institution.[43] In each model the dependent variable is the dichotomous enrollment variable for each subject. The independent variables in both models include whether the student was college qualified (yes/no) and whether the student took both steps toward attending a four-year institution (yes/no) as well as the background characteristics displayed throughout this report: race–ethnicity, family income, and parental education.[44] The regression coefficients in the model were then used to adjust the original estimates of proportions of students enrolled in public two-year or any four-year institution (see appendix B for the details of the methodology). These adjusted estimates, which take into account the joint effects of all the independent variables in the model, may then be compared to the original unadjusted proportion of all seniors who enrolled in a two-year public (26 percent) or any four-year institution (45 percent) as displayed earlier in table 2.

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[43] See appendix B for a discussion of regression models appropriate for categorical dependent variables.

[44] Financial aid was not included as a variable because the amounts are known only for those who enrolled.

The results in the first column of table 34 show the original (unadjusted) estimates of the proportion of students who enrolled in a two-year public institution by background characteristics (the original estimates are in tables 2 and 16), college qualification, and steps toward four-year college admission. Column two contains the adjusted percentages after controlling for all other independent variables. Asterisks indicate that the estimates are significantly different from the reference group, which is italicized.

For example, the unadjusted percentages indicate that only Hispanics had two-year public college enrollment rates that were significantly higher than whites, who are the reference group (34 percent compared to 25 percent). Controlling for all other characteristics, however, both Asians and Hispanics had higher community college enrollment rates than whites (32 percent of both Asians and Hispanics compared with 25 percent of whites, adjusted). This change may be due to the fact that Asians who were unqualified for four-year institutions had very high two-year public enrollment rates, as was shown in table 33.

Students from low-income families had unadjusted community college enrollment rates, similar to those of students from middle-income families (25 to 28 percent, unadjusted). Controlling for all other characteristics, however, the adjusted rates indicate that low-income students were less likely to enroll in community colleges than middle-income students (22 compared with 29 percent, adjusted). The unadjusted estimates also suggest that the community college enrollment rates of students whose parents were college graduates were lower than those whose parents had less education. Controlling for all other variables, however, indicates that students whose parents are college graduates are only less likely to enroll in community colleges than those whose parents have some college education (25 compared to 29 percent, adjusted).

A major change from the unadjusted to adjusted estimates concerns the effect of college qualification. The unadjusted estimates indicate that students who are qualified to attend four-year colleges are less likely to attend public two-year colleges than those who are marginally or not qualified (23 percent compared to 30 percent, unadjusted). The regression model, however, results in adjusted estimates that reverse the relationship. Controlling for all other variables, it is the college-qualified students who are more likely to attend community colleges than those who are not qualified (29 percent compared to 21 percent, adjusted).

In summary, the regression model indicates that, after controlling for the effect of all other variables, the community college enrollment rates of Asians and Hispanics were higher than the community college enrollment rates of white seniors. It also suggests that it is the students from families with middle incomes who were the most likely to enroll in community colleges (29 percent, adjusted) when other factors are controlled. Moreover, seniors who were qualified to attend four-year colleges were more likely to enroll in public two-year colleges than those who were not academically qualified after controlling for other factors. However, about 1 out of 10 of those who had applied to four-year colleges enrolled in a community college, while over 40 percent (unadjusted and adjusted) of those who did not take both steps toward 4-year college admission enrolled in community college.

The second regression model defines four-year institution enrollment rates as the dependent variable (private and public colleges and universities combined), and the same independent variables as in the two-year public model discussed above. The unadjusted estimates (also shown in tables 2 and 16) are compared to the adjusted regression model estimates in the right panel of table 34. Since much of the analysis in this report focused on four-year college enrollment rates, which included tables showing the effect of controlling for college qualification and taking the two steps toward admission, the results of the regression model confirm most of the previous findings.[45]

The adjusted estimates confirm that there was no significant difference in the four-year college enrollment rates of whites compared to Asians, blacks, and Hispanics when controlling for the variation of all the other variables. A statistically significant difference (of 3 percentage points) remains between low-income and middle-income four-year college enrollment rates (42 percent compared to 45 percent, adjusted). The differences between the highest level of parental education (college graduate) and the lower levels also remained. Finally, the strong effect of taking the two steps toward four-year college admission remains in the regression model: (80 percent adjusted, 76 percent adjusted). Similarly, the effect of being college qualified also remained.

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[45] No other table, however, reports "Steps taken toward a four-year" as a row variable.

Table 34—Percentage of all 1992 high school graduates enrolled in a public 2-year or any 4-year institution by 1994, by background and college-related characteristics, and the adjusted percentage after taking into account the covariation of the variables listed in the table[1]

	Attended public 2-year				Attended any 4-year			
	Unadjusted percentage[2]	Adjusted percentage[3]	WLS coefficient[4]	Standard error[5]	Unadjusted percentage[2]	Adjusted percentage[3]	WLS coefficient[4]	Standard error[5]
Total	25.7	25.9	38.6	32.7	45.1	44.9	6.7	25.7
Race–ethnicity								
Asian/Pacific Islander	28.4	32.4*	7.5	1.8	54.2*	45.0	-0.7	1.3
Hispanic regardless of race	34.3*	31.5*	6.7	1.8	30.5*	44.0	-0.2	1.4
Black, not of Hispanic origin	22.7	24.9	0.0	1.7	42.4*	46.3	2.0	1.3
White, not of Hispanic origin	24.8	24.9	†	†	47.1	44.8	†	†
Family income								
Low (less than $25,000)	25.4	21.9*	-6.6	0.9	32.5*	42.2*	-0.2	0.7
Middle ($25,000–$74,999)	27.9	28.6	†	†	47.2	44.7	†	†
High ($75,000 or more)	14.1*	22.9*	-5.7	1.2	76.5*	52.3*	4.8	0.9
Parents' highest education level								
High school graduate or less	27.3*	23.0	-1.9	1.1	25.8*	41.0*	9.6	0.8
Some college	29.5*	28.5*	3.6	0.8	41.0*	42.8*	-7.8	0.6
College graduate	18.0	24.9	†	†	71.4	50.6	†	†
College qualification index								
Qualified	22.7*	28.7*	8.1	0.8	62.0*	48.1*	9.2	0.6
Not qualified	30.3	20.6	†	†	14.7	38.9	†	†
Steps toward 4-year college								
Took both steps	13.1*	11.2*	-31.9	0.9	79.8*	76.4*	68.8	0.7
Did not take both steps	41.3	43.1	†	†	2.8	7.6	†	†

*$p \le .05$

†Not applicable for the reference group.

[1] The italicized group in each category is the reference group being compared.

[2] The estimates are from NCES:88 Data Analysis System.

[3] The percentages are adjusted for differences associated with other variables in the table (see appendix B).

[4] Weighted least squares (WLS) coefficient (see appendix B) multiplied by 100 to reflect percentage.

[5] Standard error of WLS coefficient, adjusted for design effect (see appendix B) multiplied by 100 to reflect percentage.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

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SUMMARY

Financing the cost of postsecondary education was not easy for the low-income students who graduated from high school in 1992. The majority depended on financial aid and, except for those attending community colleges, this often meant taking out student loans. Even with financial aid, low-income students had to find approximately $5,000 in additional funds from other sources to meet their postsecondary expenses. Some received contributions from their parents; some lived at home to reduce expenses; most held jobs while they were enrolled. Nearly two-thirds of the 1992 high school graduates whose families had annual incomes under $25,000 managed to attend postsecondary education within two years of completing high school.

There is no question that financial aid is an important component in financing low-income students' postsecondary education, and that it is necessary in providing access to postsecondary education. Differences in the amount of aid available, however, appear to have had a greater effect on equalizing net educational costs among different types of institutions than on access. No matter what type of institution they attended, the average net cost after aid for low-income students was approximately the same.

The question posed in this study is whether the available amounts of financial aid and the actual net college costs (as opposed to perceptions of high costs) are sufficient to account for the lower postsecondary enrollment rates of low-income high school graduates. The evidence presented here suggests that other factors also are associated with this result, especially educational expectations and plans, levels of academic aptitude and achievement, and taking the steps required to be admitted to a four-year college.[46] Tables 35 through 37 provide an overview of these factors, first for all 1992 high school graduates (table 35), then for those who were college qualified (table 36), and finally for those who were college qualified and took both steps (table 37).

Barriers to a four-year college education for low-income high school graduates appear to include low educational expectations and poor academic preparation, both of which are associated with low rates of taking the college entrance examinations and applying to four-year colleges. However, even those low-income students who were academically college qualified were less likely to take the two steps toward four-year college admission than were middle-income students. The perception that four-year college costs are too high and that the financial aid will be inadequate may have contributed to this. The more information that college-qualified low-income students obtained about financial aid (either by speaking with people or through written materials), the more likely these students were to have taken the necessary steps toward attending a four-year institution. Moreover, among those low-income students who were accepted to a four-year institution, almost 90 percent enrolled. That is, the majority of low-income high school graduates who took the college entrance examinations, applied to a four-year college, and were accepted for admission were not deterred from enrolling for financial (or other) reasons.

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[46] This confirms previous research which has found academic aptitude and achievement to be the biggest predictors of four-year college enrollment. See, for example, C. Manski and D. Wise, *College Choice in America* (Cambridge, MA: Harvard University Press, 1983), and Y. Ozden, "Have Efforts to Improve Higher Education Opportunities for Low-Income Youth Succeeded?" *Journal of Student Financial Aid* 26 (1996): 19–39.

The difference in the four-year college enrollment rates between Hispanic and black high school graduates also suggests that college access is more than a financial issue. The majority of both Hispanic and black high school graduates came from low-income families. Both groups experienced some of the same obstacles: they were less likely to be college qualified and less likely to expect to finish college as eighth graders. Black students, however, were more likely than Hispanics to attend a four-year college. Those black students who were prepared academically were just as likely to apply and take a college entrance examination as college-qualified Asian and white students, and the four-year college enrollment rates of college-qualified black students also were just as high. College-qualified Hispanic students, on the other hand, were less likely than blacks to take the necessary two steps for admission to a four-year college, and less likely than any other racial–ethnic group to enroll in four-year colleges. Factors relating to college costs or financial aid availability examined in this study do not appear to account for these persistent differences between the two groups.

Table 35—Percentage of all 1992 high school graduates who expected to finish college in 1988 and in 1992, planned to attend a 4-year institution in 1992, took both steps toward admission, were accepted to a 4-year institution, and enrolled in a 4-year institution, by 4-year college qualification index and background characteristics

	Expect to finish college (1988)	Expect to finish college (1992)	Plan to attend a 4-year institution (1992)	Took both steps[2]	Accepted to a 4-year institution	Attended a 4-year institution
Total	72.8	70.8	63.4	54.3	50.6	45.1
College qualification index[1]						
Marginally or not qualified	51.9	44.0	34.9	21.5	18.8	14.7
Minimally qualified	66.4	64.7	57.4	47.6	42.3	35.0
Somewhat qualified	81.9	80.2	71.0	67.6	62.6	55.6
Highly qualified	89.4	91.1	85.8	83.3	80.4	72.6
Very highly qualified	95.6	97.5	95.1	94.3	91.4	86.9
Race–ethnicity						
Asian/Pacific Islander	76.8	78.8	73.0	65.3	59.6	54.2
Hispanic regardless of race	64.2	65.7	54.1	38.3	36.2	30.5
Black, not of Hispanic origin	70.7	73.1	63.1	52.9	48.5	42.4
White, not of Hispanic origin	74.2	70.7	64.1	56.2	52.6	47.1
Family income						
Low (less than $25,000)	58.8	59.4	53.2	41.0	37.8	32.5
Middle ($25,000–$74,999)	75.7	73.2	64.5	56.9	53.1	47.2
High ($75,000 or more)	91.8	92.1	87.4	84.5	81.1	76.5
Parents' highest education level						
High school graduate or less	54.9	53.3	46.4	34.3	30.9	25.8
Some college	70.7	68.3	60.5	51.2	47.2	41.0
College graduate	91.0	89.5	82.8	79.4	76.3	71.4

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking a college entrance examination (SAT or ACT), and applying for admission to a 4-year college or university.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

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Table 36—Percentage of college-qualified[1] 1992 high school graduates who expected to finish college in 1988 and in 1992, planned to attend a 4-year institution in 1992, took both steps toward admission, were accepted to a 4-year institution, and enrolled in a 4-year institution, by 4-year college qualification index and background characteristics

	Expect to finish college (1988)	Expect to finish college (1992)	Plan to attend a 4-year institution (1992)	Took both steps[2]	Accepted to a 4-year institution	Attended a 4-year institution
Total	83.1	83.3	77.1	72.6	68.6	62.0
College qualification index[1]						
Minimally qualified	66.4	64.7	57.4	47.6	42.3	35.0
Somewhat qualified	81.9	80.2	71.0	67.6	62.6	55.6
Highly qualified	89.4	91.1	85.8	83.3	80.4	72.6
Very highly qualified	95.6	97.5	95.1	94.3	91.4	86.9
Race–ethnicity						
Asian/Pacific Islander	83.7	89.9	84.7	80.1	75.1	68.1
Hispanic regardless of race	75.5	78.3	70.4	61.4	57.6	49.2
Black, not of Hispanic origin	81.7	82.7	81.4	74.4	70.0	64.2
White, not of Hispanic origin	84.1	83.4	77.0	73.2	69.3	62.8
Family income						
Low (less than $25,000)	69.8	74.2	70.5	61.5	59.0	52.2
Middle ($25,000–$74,999)	84.8	84.4	76.9	73.3	68.8	61.6
High ($75,000 or more)	94.7	95.5	91.4	90.7	88.5	83.1
Parents' highest education level						
High school graduate or less	68.3	71.7	66.2	58.1	53.4	45.7
Some college	80.3	80.4	72.6	67.2	63.0	56.1
College graduate	93.2	92.9	88.4	87.0	84.4	78.8

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking a college entrance examination (SAT or ACT), and applying for admission to a 4-year college or university.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

Table 37—Percentage of college-qualified[1] 1992 high school graduates who took both steps[2] toward admission to a 4-year institution who expected to finish college in 1988 and in 1992, planned to attend a 4-year institution in 1992, took both steps toward admission, were accepted to a 4-year institution, and enrolled in a 4-year institution, by 4-year college qualification index and background characteristics

	Expect to finish college (1988)	Expect to finish college (1992)	Plan to attend a 4-year institution (1992)	Took both steps	Accepted to a 4-year institution	Attended a 4-year institution
Total	90.7	94.3	93.4	100.0	93.3	83.7
College qualification index[1]						
Minimally qualified	79.9	86.2	86.3	100.0	84.6	68.5
Somewhat qualified	88.8	91.2	90.5	100.0	91.5	80.8
Highly qualified	92.4	96.6	95.6	100.0	96.2	86.6
Very highly qualified	96.4	98.9	97.5	100.0	96.7	91.8
Race–ethnicity						
Asian/Pacific Islander	88.3	96.7	95.8	100.0	93.6	84.4
Hispanic regardless of race	83.0	90.6	92.9	100.0	90.9	77.2
Black, not of Hispanic origin	87.6	91.6	92.9	100.0	90.3	81.5
White, not of Hispanic origin	91.7	94.7	93.4	100.0	93.8	84.4
Family income						
Low (less than $25,000)	81.1	90.4	91.2	100.0	93.5	82.5
Middle ($25,000–$74,999)	91.2	94.9	93.3	100.0	92.7	82.0
High ($75,000 or more)	96.1	97.3	96.8	100.0	97.5	91.5
Parents' highest education level						
High school graduate or less	81.6	92.2	92.9	100.0	89.7	75.5
Some college	87.5	93.0	90.8	100.0	92.2	81.4
College graduate	96.0	96.6	96.2	100.0	96.6	89.6

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Taking a college entrance examination (SAT or ACT), and applying for admission to a 4-year college or university.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis Syste.n.

APPENDIX A—GLOSSARY

This glossary describes the variables used in this report. The items were taken directly from the National Education Longitudinal Study: 1988–1994 and NPSAS:93 Data Analysis System (DAS) (see appendix B for a description of the DAS). These variables were either items taken directly from the NPSAS or NELS surveys or they were derived by combining one or more items in these surveys. Unless otherwise noted, the variable labels are those appearing in the DAS.

The NELS:88 variables and definitions are divided into six categories: individual characteristics, academic characteristics, plans and expectations for postsecondary education, postsecondary education, and financial aid issues. Variables from NPSAS:93 are listed separately.

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Individual Characteristics

Race–ethnicity **F3RACE**

Asian or Pacific Islander	A person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or Pacific Islands. This includes people from China, Japan, Korea, the Philippine Islands, Samoa, India, and Vietnam.
Hispanic, regardless of race	A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
Black, not of Hispanic origin	A person having origins in any of the black racial groups of Africa, except those of Hispanic origin.
White, not of Hispanic origin	A person having origins of any of the original peoples of Europe, North Africa, or the Middle East (except those of Hispanic origin).

Family income **F2P74**

In 1992, parents were asked, "What was your total gross family income from all sources before taxes in 1991 (If you are not sure of the amount, please estimate)?" For purposes of this report, the original 13 income categories were collapsed into three.

Low (less than $25,000)	Family income was less than $25,000.
Middle ($25,000–$74,999)	Family income was between $25,000 and $74,999.
High ($75,000 or higher)	Family income was $75,000 or higher.

Parents' highest education level **F2PARED**

This composite characterizes the level of education attained by the parent with the highest reported education level. It was constructed using second follow-up parent questionnaire data; data from earlier survey waves were used if data were missing. For purposes of this report, levels of education were collapsed to create three categories.

High school graduate or less	Highest level of parental education was either high school graduation or less than high school graduation.
Some college	Highest level of parental education was greater than high school and less than 4-year degree.
College graduate	Highest level of parental education was college graduate, M.A. or equivalent, or Ph.D., M.D., or other professional degree.

Weight for 1992 high school graduates **F3QWT92G**

F3QWT92G includes F3QWT for respondents who received a high school diploma between September 1, 1991 and August 31, 1992 or respondents whose diploma receipt date is not known but began their postsecondary education during the period of June 1992 through October 1992. It allows projections to the population of persons who received a high school diploma during those time periods and were eligible to complete questionnaires in 1992 and 1994.

Academic Characteristics

GPA calculated from academic courses **AGPA**

This variable is the grade point average for all academic courses that were reported in the student transcripts, multiplied by 10.

Combined SAT score **SAT**

The combined scores of the Scholastic Assessment Test (SAT) verbal and math scores. The valid range is 400 to 1600.

Composite ACT score **F2RACTC**

Composite score on the ACT test.
The valid range for this test score is 1 to 36.

1992 NELS test percentile **F22XCEN**

The source for this variable was the composite variable consisting of math and reading NELS Second Follow-Up test scores. To create the derived variable, a ranking was created by first calculating a weighted frequency distribution of test composite variables. Next, cutoff points were determined and numbered sequentially from 1 to 99.

Class rank percentile **F3RANK_C**

F3RANK_C is a measure of a student's class rank during the last year he or she attended high school. It draws on F2RRANK (class rank for last year attended) and F2RCSIZE (class size for last year attended) from the 1992 transcript data. It is calculated by dividing the class rank by the class size and subtracting the result from 1.

College qualification index **CQCOMV2**

For this study, a composite measure of 4-year college readiness or qualification index was developed that uses cumulative academic coursework GPAs, senior class rank, the NELS 1992 test scores, and the SAT and ACT college entrance examination scores. Since admission standards and requirements vary widely among 4-year colleges and universities, the approach used here was to examine the actual distribution of these five measures of academic aptitude and achievement among those graduating seniors who did attend a 4-year college or university. Data sources were available for approximately half (45 percent) of the NELS graduating seniors for four or five of the criteria: class rank, GPA, the NELS test, and ACT or SAT scores or both. For about one-third of the seniors there were only three data sources available because they had no ACT or SAT scores. All of these had NELS test scores, however. In order to identify as many students as possible who were potentially academically qualified for a 4-year college, even if data were missing for these students on some of the criteria, the seniors were classified according to the *highest* level they had achieved on *any* of the five criteria for which data were present.

The initial classification of the graduating seniors was determined as follows:

- Very highly qualified: those whose highest value on any of the five criteria would put them among the top 10 percent of four-year college students (specifically the NELS 1992 graduating seniors who enrolled in four-year colleges and universities) for that criterion. Minimum values were GPA=3.7, class rank percentile=96, NELS test percentile=97, combined SAT=1250, composite ACT=28.
- Highly qualified: those whose highest value on any of the five criteria would put them among the top 25 percent of four-year college students for that criterion. Minimum values were GPA=3.6, class rank percentile=89, NELS test percentile=90, combined SAT=1110, composite ACT=25.
- Somewhat qualified: those whose highest value on any of the five criteria would put them among the top 50 percent (i.e., in the second quartile) of four-year college students for that criterion. Minimum values were GPA=3.2, class rank percentile=75, NELS test percentile=76, combined SAT=960, composite ACT=22.
- Minimally qualified: those whose highest value on any of the five criteria would put them among the top 75 percent (i.e., in the third quartile) of four-year college students for that criterion. Minimum values were GPA=2.7, class rank percentile=54, NELS test percentile=56, combined SAT=820, composite ACT=19. [Those in vocational programs (according to their high school transcript) were classified as not college qualified.]
- Marginally or not qualified: those who had no value on any criterion that would put them among the top 75 percent of four-year college students (i.e., all values were in the lowest quartile).

Then some adjustments were made for programs of rigorous academic coursework, defined as including at least 4 years of English; 3 years each of science, mathematics, and social studies; and 2 years of a foreign language.

Those who had taken a program of rigorous academic courses were moved up into one higher level of qualification; and

Those in the "very highly qualified" category were moved down into the "highly qualified" category if they had not taken the rigorous academic coursework;

Marginally or not qualified	Student was marginally or not qualified to attend a 4-year college.
Minimally qualified	Student was minimally qualified to attend a four-year college.
Somewhat qualified	Student was somewhat qualified to attend a four-year college.
Highly qualified	Student was highly qualified to attend a 4-year college.
Very highly qualified	Student was very highly qualified to attend a 4-year college.

For some tables, students were identified as "college qualified" if they were other than "marginally or not qualified" for the variable **CQCOMV2**.

Sources available for college qualification index **CQSOURCE**

As originally coded, this variable describes which sources of information were available in determining how qualified a student was for admission to a 4-year university or college. Five sources of information were used to determine how qualified a student was for admission to a 4-year institution: cumulative academic GPAs, senior class rank, the NELS 1992 test scores, and the SAT and ACT college entrance examination scores (see *CQCOMV2*). For purposes of this report, categories were collapsed into four categories to reflect the number of sources of information that were available to determine individual students' qualifications.

One	One source of information was available.
Two	Two sources of information were available.
Three	Three sources of information were available.
Four–five	Four or five sources of information were available.

Plans and Expectations for Postsecondary Education (PSE)

Plans to attend PSE immediately after high school **F2S49**

Yes	Student planned to attend PSE immediately after high school.
No	Student did not plan to attend PSE right after high school.
Don't know	Student did not know if he or she was going on to attend PSE right after high school.

Type of institution planned to attend **PLANS92**

Planned ever to attend PSE

In 1992 students who planned to continue their education at some point after high school were asked what type of school they were most likely to attend.

4-year college	Student planned to attend a 4-year college.
2-year college or trade school	Student planned to attend either a 2-year academic or technical college, or a trade school
No postsecondary education	Student did not plan to continue his or her education.

Educational expectations in 1988 **BYS4**

Educational expectations in 1992 **F2ASPIRE**

The question was "As things stand now, how far in school do you think you will get?" The categories for the preceding two variables were:

High school or less	Student expected to finish high school or less.
Trade/vocational	Student expected to complete trade or vocational school.
Some college	Student expected to complete some college.
Finish college	Student expected to attain a bachelor's degree.

Graduate degree	Student expected to attain a graduate degree.
Do not know	Student was unsure of expectations.

However, for purposes of this report, the categories were recoded as follows:

No postsecondary education	Student expected to complete high school or less.
Some PSE	Student expected to complete trade or vocational school or some college.
Finish college	Student expected to attain at least a bachelor's degree.

Postsecondary Education

Postsecondary enrollment and type of institution attended **F3SEC2A1**

No postsecondary enrollment	Student had not enrolled in any postsecondary institution as of 1994.
Private, not-for-profit less-than-4-year	A private, not-for-profit institution offering a less-than-4-year degree and controlled by an independent governing board and incorporated under section 501(c)(3) of the Internal Revenue Code.
Public less-than-2-year	A public less-than-2-year (vocational–technical) postsecondary institution is supported primarily by public funds and operated by publicly elected or appointed officials who control the school's program and activities.
Public 2-year	A public institution offering a two- or three-year degree (i.e., associate's degree).
Private, not-for-profit 4-year	A private, not-for-profit college or university offering a bachelor's degree or higher.
Public 4-year	A public college or university offering a bachelor's degree or higher.

For some tables, students were identified as "enrolled in a postsecondary institution" if they fell into any category other than "no secondary enrollment" on the variable **F3SEC2A1**.

For purposes of this report, the categories above were collapsed into three categories for most of the tables.

Other less-than-4-year	Private, for-profit, private, not-for-profit less-than-4-year, public less-than-2-year.
Public 2-year	Public 2-year institution.
Any 4-year	Private, not-for-profit 4-year or public 4-year institution.

Table 29 of the report collapsed two categories even further:

Less-than-4-year	Private, for-profit, private, not-for-profit less-than-4-year, public less-than-2-year, public 2-year.

Postsecondary enrollment in October of 1992 **ENST1092**

This variable describes the postsecondary enrollment status of all respondents in October of 1992.

For purposes of this report, categories were collapsed into two in order to indicate enrollment status.

Yes	Respondent was enrolled in a postsecondary institution in October of 1992.
No	Respondent was not enrolled in a postsecondary institution in October of 1992.

Applied to a 4-year institution **EVR4YRA**

This derived variable describes whether or not a respondent ever applied to a 4-year institution. It is based primarily on student-reported data. However, if respondents reported enrollment in a 4-year institution, they were also considered to have applied.

Yes	Respondent applied to a 4-year postsecondary institution.
No	Respondent did not apply to a 4-year postsecondary institution.

Applied to a private 4-year institution EVRNFP4A

This derived variable describes whether or not a respondent ever applied to a private, not-for-profit 4-year institution. It is based primarily on student-reported data. However, if respondents reported enrollment in a private, not-for-profit 4-year institution, they were also considered to have applied.

Yes	Respondent applied to a private, not-for-profit 4-year postsecondary institution.
No	Respondent did not apply to a private, not-for-profit 4-year postsecondary institution.

Applied to a public 4-year institution EVRPUB4A

This derived variable describes whether or not a respondent ever applied to a public 4-year institution. It is based primarily on student-reported data. However, if respondents reported enrollment in a public 4-year institution, they were also considered to have applied.

Yes	Respondent applied to a public 4-year postsecondary institution.
No	Respondent did not apply to a public 4-year postsecondary institution.

Accepted to a 4-year institution ACPT4YR

This variable describes whether or not the respondent was ever accepted for admission to a 4-year postsecondary institution. Respondents were asked various questions about admission and acceptance to up to two postsecondary institutions. If at least one of the institutions to which a respondent had been accepted was a 4-year institution, then the respondent was considered to have been accepted to a 4-year institution. If the respondent did not report being admitted to a 4-year institution but the first institution attended was a 4-year institution, then the respondent was considered to have been accepted to a 4-year institution.

Yes	Student was accepted for admission to at least one 4-year institution.
No	Student was not accepted for admission to any 4-year institution.

Accepted to a private 4-year institution **ACPTPRIV**

This variable describes whether or not the respondent was ever accepted for admission to a private, not-for-profit 4-year postsecondary institution. Respondents were asked various questions about admission and acceptance to up to two postsecondary institutions. If at least one of the institutions to which a respondent had been accepted was a private, not-for-profit 4-year institution, then the respondent was considered to have been accepted to a private, not-for-profit 4-year institution. If the respondent did not report being admitted to a private, not-for-profit 4-year institution yet the first institution attended was a private, not-for-profit 4-year institution, then the respondent was considered to have been accepted to a private, not-for-profit 4-year institution.

Yes	Student was accepted for admission to at least one private, not-for-profit 4-year institution.
No	Student was not accepted for admission to any private, not-for-profit 4-year institution.

Accepted to a public 4-year institution **ACPTPUB**

This variable describes whether or not the respondent was ever accepted for admission to a public 4-year postsecondary institution. Respondents were asked various questions about admission and acceptance to up to two postsecondary institutions. If at least one of the institutions to which a respondent had been accepted was a public 4-year institution, then the respondent was considered to have been accepted to a public 4-year institution. If the respondent did not report being admitted to a public 4-year institution but the first institution attended was a public 4-year institution, then the respondent was considered to have been accepted to a public 4-year institution.

Yes	Student was accepted for admission to at least one public 4-year institution.
No	Student was not accepted for admission to any public 4-year institution.

Steps toward attending a 4-year institution **EXMAPLY2**

The purpose of this derived variable is to describe whether students ever took a college entrance examination (either the SAT or ACT) and applied for admission to a 4-year institution. It is primarily based on student-reported data. However, if a students reported attending a 4-year institution, they were considered to have applied to a 4-year institution.

Took both steps	Student took an exam and applied to a 4-year institution.
Took exam, did not apply	Student took an exam but did not apply to any 4-year institution.
Did not take exam, did apply	Student did not take an exam but did apply to a 4-year institution.
Did neither	Student did not take an exam and did not apply to a 4-year institution.

For some tables, the second and third categories above were collapsed into one: "one step."

Financial Aid Issues

Students

Grants and scholarships	**GRANTS1**
Student loans	**LOANS1**
Work-study jobs	**WORKSTD1**

Respondents were asked whether they had received these types of financial aid while at the first institution they attended.

Yes	Respondents indicated that they had received this type of aid.
No	Respondents indicated that they had not received type of aid.

Received financial aid **NOFINA1**

1994 students were asked if they had received various types of financial aid while attending their first institution. "None" was an option. Students were considered to have received financial aid if they answered "no" to the option of "None received."

Amount of financial aid **AMTFINA1**

This variable describes the total amount of financial aid students reported receiving yearly during their most recent period of enrollment at first institution they attended.

Number of sources of information read by students about financial aid **AIDINFO1**

In 1992, students were asked if they had ever read any information from the Department of Education or a postsecondary institution in order to learn more about financial aid (F2S58D and F2S58E). This variable combines the students' answers to these two questions.

None	Student reported not having read information from either source.
One	Student reported having read information from only one source.
Two	Student reported having read information from both sources.

Number of people students spoke with to learn more about financial aid **AIDTALK1**

Students were asked what they had done to learn more about applying for financial aid (F2S58A-C and F2S58G). Students were asked if they had spoken with the following people: a counselor or a teacher, a representative from a postsecondary institution, a loan officer from a bank, or another knowledgeable adult. This variable counts the number of positive responses.

None	Student did not speak with anyone.
One	Student spoke with one person.
Two	Student spoke with two people.
Three–Four	Student spoke with three to four people.

Students' concern about college costs and availability of financial aid **COLLAFF1**

In 1992, students were asked to rate the importance of low expenses and financial aid in choosing a college to attend as "very," "somewhat," or "not" important. (F2S59A and F2S59B). This variable combines students' answers on both to measure general concern about affordability in choosing a college to attend. Response category "very concerned" describes those who either: (1)

rated both characteristics as "very important," or (2) rated at least one as "very important" and the other as "somewhat important."

Very concerned	Student rated both low expenses and financial aid as "very important" or at least one as "very important" and the other as "somewhat important."
Less than very concerned	Other combinations of responses.

Talked with a teacher or high school guidance counselor	**F2S58A**
Talked with a college representative	**F2S58B**
Talked with a loan officer at a bank	**F2S58C**
Talked to another knowledgeable adult	**F2S58G**

For the preceding four variables, students were asked if they had done any of the above to learn about applying for financial aid for further education. Response categories were "yes" and "no."

Yes	Student responded that they had talked with this person.
No	Student responded that they had not talked with this person.

Parents

Number of sources of information read by parents about financial aid	**AIDINFO2**

In 1992, parents were asked if they had ever read any information from the Department of Education or a postsecondary institution in order to learn more about financial aid (F2P84E and F2P84F). This variable combines the parents' answers to these two questions.

None	Parent reported not having read information from either source.
One	Parent reported having read information from only one source.

Two	Parent reported having read information from both sources.

Number of people parents spoke with to learn more about financial aid **AIDTALK2**

Parents were asked what they had done to learn more about applying for financial aid for their children's education after high school (F2P84A-C and F2P84G). Parents were asked if they had spoken with the following people: a counselor or a teacher, a representative from a postsecondary institution, a loan officer from a bank, or another person. This variable counts the number of positive responses.

None	Parent did not speak with anyone.
One	Parent spoke with one person.
Two	Parent spoke with two people.
Three–Four	Parent spoke with three to four people.

Parents' concern about college costs and availability of financial aid **COLLAFF2**

In 1992, parents were asked to rate how important low expenses (F2P66A) and the availability of financial aid (F2P66B) were to them as their children chose colleges to attend. This variable combines parents' answers on both to reflect general concern about affordability in choosing a college to attend.

Very concerned	Parent rated low expenses and financial aid as "very important" or at least one as "very important" and the other as "somewhat important."
Less than very concerned	Other combinations of responses.

Talked with a teacher or high school guidance counselor **F2P84A**

Talked with a college representative **F2P84B**

Talked with a loan officer at a bank **F2P84C**

Talked to another person **F2P84G**

For the preceding four variables, parents were asked if they or their spouses/partners had done any of the above to learn about applying for financial aid for further education for their teenagers. Response categories were "yes" and "no."

Yes	Parents responded that they had talked with this person.
No	Parents responded that they had not talked with this person.

NPSAS:93 VARIABLES

Type of institution **SECTOR_B**

Institution level concerns the institution's highest offering (length of program and type of certificate, degree, or award), and control concerns the source of revenue and control of operations. Definitions are the same as those for F3SEC2A1 in NELS:88.

Public 2-year	Public 2-year institution.
Public 4-year	Public 4-year institution.
Private, not-for-profit 4-year	Private, not-for-profit 4-year institution.
Other less-than-4-year	Public less-than-2-year institution, private, not-for-profit less-than-4-year institution, or private, for-profit institution.

Average amount of financial aid **TOTAID**

The amount of financial aid received by a student in 1992–93 from any source (federal, state, institution, other). Includes grants, loans, and work-study, as well as loans under the PLUS program. Students receiving aid were identified by the TOTAID variable having a positive value.

Grant amount **TOTGRT**

Total amount of grant or scholarship aid received by a student in 1992–93 from any source (federal, state, institution, other). Grants are a type of student financial aid that does not require repayment or employment. They are usually (but not always) awarded on the basis of need. When grants are awarded on the basis of some skills or characteristics the student possesses, they are often called scholarships. The percentage of students with grants is the percentage with positive amounts recorded for this variable.

Student loan amount **TOTLOAN**

Total amount of loan aid received by a student in 1992–93. This includes all loans through federal, state, or institutional programs except PLUS loans (which are made to parents). Loans are a type of student financial aid that advances funds and that are evidenced by a promissory note requiring the recipient to repay the specified amounts under prescribed conditions. The percentage of students with loans is the percentage with positive amounts recorded by this variable.

Work-study amount **TOTWKST**

Total amount of work-study aid received by students in 1992–93. Work-study programs provide partial reimbursement of wages paid to students. They may be sponsored by the federal or state governments or by the institution. The percentage of students with work study is the percentage with positive amounts recorded for this variable.

Net tuition **NETCST7**

The tuition and fees for 1992–93 charged by the institution minus grants and scholarships. Negative values are set to zero.

Net cost after aid **NETCST3**

The cost of attendance minus all financial aid. Equal to the attendance adjusted total student budget (BUDGETAJ), minus the total amount of financial aid (TOTAID).

Tuition and fees **TUITION**

Actual amount of tuition and fees charged the student for the terms attended, as reported by the institution.

Contribution from parents **SPARSPRT**

Student-reported amount of direct monetary contribution from both parents for academic year 1992–93 school expenses, not including loans or in-kind support.

Total cost of attendance **BUDGETAJ**

Equal to the sum of tuition actually charged and total non-tuition budget components, adjusted for attendance status (full-time or part-time) and number of months enrolled.

Average hours work per week while enrolled 1992–1993, revised **EMWKHR4**

The average number of hours worked per week while enrolled (including work study). If a student reported being employed during the month, the average number of hours worked per week was derived based on the starting and ending dates and the hours reported for each job during the survey interview. Note that this variable only represents the average hours a student worked while working and enrolled. Thus, if a student worked an average of 20 hours per week while enrolled for 6 months and then did not work for the remaining 3 months of enrollment, the average hours would still be 20 hours per week. The percentage of students working while enrolled is the percentage with positive amounts recorded for this variable.

Housing Arrangements **LOCRES2**

Student's residence in school-owned housing, off-campus, or with parents.

Campus housing	Student lived in institution-owned living quarters for students. These are typically institution-owned dormitories, residence halls, or other facilities.
Off campus	Student lived off campus in noninstitution-owned housing, but not with his or her parents.
With parents	Student lived at home with parents.

APPENDIX B—TECHNICAL NOTES AND METHODOLOGY

THE NATIONAL EDUCATIONAL LONGITUDINAL STUDY OF 1988

The National Education Longitudinal Study of 1988 (NELS:88) is a survey that began with a nationally representative sample of 1988 eighth graders and followed them every two years. The most recent follow-up survey occurred in 1994. Respondents' teachers and schools were also surveyed in 1988, 1990, and 1992, while parents were surveyed in 1988 and 1992. In contrast to previous longitudinal studies, NELS:88 began with eighth graders in order to collect data regarding the transition from elementary to secondary education. The first follow-up in 1990 provided the data necessary to understand the transition. Dropouts were administered a special survey to understand the dropout process more thoroughly. For the purpose of providing a comparison group to 1980 sophomores surveyed in High School and Beyond, the NELS:88 sample was also "freshened" with new participants who were tenth graders in 1990.

In spring of 1992, when most of the NELS:88 sample were twelfth graders, the second follow-up took place. This survey focused on the transition from high school to the labor force and postsecondary education. The sample was also "freshened" in order to create a representative sample of 1992 seniors for the purpose of conducting trend analyses with the 1972 and 1982 senior classes (NLS-72 and HS&B). Students identified as dropouts in the first follow-up were also resurveyed in 1992. In spring of 1994, the third follow-up was administered. Sample members were questioned about their labor force and postsecondary experiences, and family formation. For more information about the NELS:88 survey, consult the NELS:88/94 Methodology Report.[47]

ACCURACY OF ESTIMATES

The statistics in this report are estimates derived from a sample. Two broad categories of error occur in such estimates: sampling and nonsampling errors. Sampling errors occur because observations are made only on samples of students, not on entire populations. Nonsampling errors occur not only in sample surveys but also in complete censuses of entire populations. Nonsampling errors can be attributed to a number of sources: inability to obtain complete information about all students in all institutions in the sample (some students or institutions refused to participate, or students participated but answered only certain items); ambiguous definitions; differences in interpreting questions; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors of collecting, processing, sampling, and imputing missing data.

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[47] U.S. Department of Education, National Center for Education Statistics, *National Education Longitudinal Study (NELS:88/94) Methodology Report*, NCES 96-174 (Washington D.C.: 1996).

DATA ANALYSIS SYSTEM

The estimates presented in this report were produced using the NELS:88 and NPSAS:93 Data Analysis Systems (DAS). The DAS software makes it possible for users to specify and generate their own tables from the NELS:88 data. With the DAS, users can replicate or expand upon the tables presented in this report. In addition to the table estimates, the DAS calculates proper standard errors[48] and weighted sample sizes for these estimates. For example, table B1 contains standard errors that correspond to table 2 in the text, and was generated by the DAS. If the number of valid cases is too small to produce a reliable estimate (less than 30 cases), the DAS prints the message "low-N" instead of the estimate.

In addition to tables, the DAS will also produce a correlation matrix of selected variables to be used for linear regression models. Included in the output with the correlation matrix are the design effects (DEFTs) for each variable in the matrix. Since statistical procedures generally compute regression coefficients based on simple random sample assumptions, the standard errors must be adjusted with the design effects to take into account the NELS:88 and NPSAS:93 stratified sampling method. (See discussion under "Statistical Procedures" below for the adjustment procedure.)

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[48] The NELS:88/94 and NPSAS:93 samples are not simple random samples and, therefore, simple random sample techniques for estimating sampling error cannot be applied to these data. The DAS takes into account the complexity of the sampling procedures and calculates standard errors appropriate for such samples. The method for computing sampling errors used by the DAS involves approximating the estimator by the linear terms of a Taylor series expansion. The procedure is typically referred to as the Taylor series method.

Table B1—Standard errors for table 2: percentage distribution of all college-qualified[1] 1992 high school graduates according to postsecondary enrollment by 1994 and type of institution attended, by background characteristics

	No postsecondary education	Other less than 4-year institution[2]	Public 2-year institution	Any 4-year institution
Total	0.58	0.31	0.91	1.03
Race–ethnicity				
Asian/Pacific Islander	1.58	0.60	2.61	2.84
Hispanic regardless of race	2.08	0.70	2.60	2.99
Black, not of Hispanic origin	2.74	0.77	2.26	3.26
White, not of Hispanic origin	0.62	0.37	1.06	1.17
Family income				
Low (less than $25,000)	1.61	0.74	1.52	1.78
Middle ($25,000–$74,999)	0.66	0.51	1.19	1.30
High ($75,000 or more)	0.57	0.40	1.40	1.48
Parents' highest education level				
High school graduate or less	1.61	0.64	1.97	1.78
Some college	1.00	0.38	1.37	1.40
College graduate	0.46	0.66	1.04	1.24

[1] 4-year college qualification index based on high school GPA, senior class rank, NELS 1992 aptitude test, SAT and ACT scores, and academic coursework.

[2] Primarily private for-profit vocational and private not-for-profit 2-year institutions.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Education Longitudinal Study: 1988–94 (NELS:88), Data Analysis System.

For more information about the NELS:88 and NPSAS:93 Data Analysis Systems, consult the NCES DAS Website (WWW.PEDAR-DAS.org) or contact:

Aurora D'Amico
NCES Data Development and Longitudinal Studies Group
555 New Jersey Avenue, NW
Washington, DC 20208-5652
(202) 219-1365
Internet address: Admico@inet.ed.gov

STATISTICAL PROCEDURES

Two types of statistical procedures were employed in this report: testing differences between means, and adjustment of means after controlling for covariation among a group of variables. Each procedure is described below.

Differences Between Means

The descriptive comparisons were tested in this report using Student's *t* statistic. Differences between estimates are tested against the probability of a Type I error, or significance level. The significance levels were determined by calculating the Student's *t* values for the differences between each pair of means or proportions and comparing these with published tables of significance levels for two-tailed hypothesis testing.

Student's *t* values may be computed to test the difference between estimates with the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}} \tag{1}$$

where E_1 and E_2 are the estimates to be compared and se_1 and se_2 are their corresponding standard errors. This formula is valid only for independent estimates. When estimates are not independent a covariance term must be added to the formula. If the comparison is between the mean of a subgroup and the mean of the total group, the following formula is used:

$$\frac{E_{sub} - E_{tot}}{\sqrt{se_{sub}^2 + se_{tot}^2 - 2p \ se_{sub}^2}} \tag{2}$$

where p is the proportion of the total group contained in the subgroup.[49]

When comparing two percentages from a distribution that adds to 100 percent, the following formula is used:

$$\frac{E_1 - E_2}{\sqrt{Se_1^2 + Se_2^2 - 2rSe_1^2 Se_2^2}} \tag{3}$$

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[49] U.S. Department of Education, National Center for Education Statistics, *A Note from the Chief Statistician*, No. 2, 1993.

where r is the correlation between the two estimates.[50] The estimates, standard errors, and correlations can all be obtained from the DAS.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large t statistics may appear to merit special attention. This can be misleading, since the magnitude of the t statistic is related not only to the observed differences in means or percentages but also to the number of students in the specific categories used for comparison. Hence, a small difference compared across a large number of students would produce a large t statistic.

A second hazard in reporting statistical tests for each comparison occurs when making multiple comparisons among categories of an independent variable. For example, when making paired comparisons among different levels of income, the probability of a Type I error for these comparisons taken as a group is larger than the probability for a single comparison. When more than one difference between groups of related characteristics or "families" are tested for statistical significance, one must apply a standard that assures a level of significance for all of those comparisons taken together.

Comparisons were made in this report only when $p \leq .05/k$ for a particular pairwise comparison, where that comparison was one of k tests within a family. This guarantees both that the individual comparison would have $p \leq .05$ and that for k comparisons within a family of possible comparisons, the significance level for all the comparisons will sum to $p \leq .05$.[51]

For example, in a comparison of the percentages of males and females who enrolled in postsecondary education only one comparison is possible (males versus females). In this family, $k=1$, and the comparison can be evaluated without adjusting the significance level. When students are divided into five racial–ethnic groups and all possible comparisons are made, then $k=10$ and the significance level of each test must be $p \leq .05/10$, or $p \leq .005$. The formula for calculating family size (k) is as follows:

$$k = \frac{j(j-1)}{2} \qquad (4)$$

---

[50] Ibid.

[51] The standard that $p \leq .05/k$ for each comparison is more stringent than the criterion that the significance level of the comparisons should sum to $p \leq .05$. For tables showing the t statistic required to ensure that $p \leq .05/k$ for a particular family size and degrees of freedom, see Olive Jean Dunn, "Multiple Comparisons Among Means," *Journal of the American Statistical Association* 56 (1961): 52–64.

where j is the number of categories for the variable being tested. In the case of race–ethnicity, there are five racial–ethnic groups (American Indian, Asian/Pacific Islander, black non-Hispanic, Hispanic, and white non-Hispanic), so substituting 5 for j in equation 2,

$$k = \frac{5(5-1)}{2} = 10$$

Adjustment of Means to Control for Background Variation

Tabular results are limited by sample size when attempting to control for additional factors that may account for the variation observed between two variables. For example, when examining the percentages of those who completed a degree, it is impossible to know to what extent the observed variation is due to socioeconomic status (SES) differences and to what extent it is due to differences in other factors related to SES, such as type of institution attended, intensity of enrollment, and so on. However, if a nested table were produced showing SES within type of institution attended, within enrollment intensity, the cell sizes would be too small to identify the patterns. When the sample size becomes too small to support controls for another level of variation, one must use other methods to take such variation into account.

To overcome this difficulty, multiple linear regression was used to obtain means that were adjusted for covariation among a list of control variables.[52] Adjusted means for subgroups were obtained by regressing the dependent variable on a set of descriptive variables such as race–ethnicity, family income, etc. Substituting ones or zeros for the subgroup characteristic(s) of interest and the mean proportions for the other variables results in an estimate of the adjusted proportion for the specified subgroup, holding all other variables constant. For example, consider a hypothetical case in which two variables, race–ethnicity and income, are used to describe an outcome, Y (such as attending a four-year college). The variables race–ethnicity and family income are recoded into a dummy variable representing race–ethnicity and a dummy variable representing family income:

Race–ethnicity	R
Black students	1
Non-black students	0

---

[52] For more information about regression, see Michael S. Lewis-Beck, *Applied Regression: An Introduction*, Vol. 22 (Beverly Hills, CA: Sage Publications, Inc., 1980); W.D. Berry and S. Feldman, *Multiple Regression in Practice*, Vol. 50 (Beverly Hills, CA: Sage Publications, Inc., 1987).

and

Family income	*F*
Low income	1
Not low-income	0

The following regression equation is then estimated from the correlation matrix output from the DAS:

$$\hat{Y} = a + b_1 R + b_2 F \tag{5}$$

To estimate the adjusted mean for any subgroup evaluated at the mean of all other variables, one substitutes the appropriate values for that subgroup's dummy variables (1 or 0) and the mean for the dummy variable(s) representing all other subgroups. For example, suppose we had a case where *Y* was being described by race–ethnicity (*R*) and family income (*F*), coded as shown above, and the means for *R* and *F* are as follows:

Variable	Mean
R	0.109
F	0.282

Suppose the regression equation results in:

$$\hat{Y} = 0.51 + (0.03)R + (-0.21)F \tag{6}$$

To estimate the adjusted value for black students, one substitutes the appropriate parameter values into equation 4.

Variable	Parameter	Value
a	0.51	—
R	0.32	1.000
F	-0.21	0.282

This results in:

$$\hat{Y} = 0.51 + (0.032)(1) + (-0.21)(0.282) = 0.48 \tag{7}$$

In this case the adjusted mean for black students is 0.48 and represents the expected outcome for black students who look like the average student across the other variables (in this example, family income). In other words, the adjusted percentage who enrolled in a four-year college is 48 percent (0.48 x 100 for conversion to a percentage).

It is relatively straightforward to produce a multivariate model using the DAS, since one of the DAS output options is a correlation matrix, computed using pair-wise missing values.[53] This matrix can be used by most statistical software packages as the input data for least-squares regression. That is the approach used for this report, with an additional adjustment to incorporate the complex sample design into the statistical significance tests of the parameter estimates (described below). For tabular presentation, parameter estimates and standard errors were multiplied by 100 to match the scale used for reporting unadjusted and adjusted percentages.

Most statistical software packages assume simple random sampling when computing standard errors of parameter estimates. Because of the complex sampling design used for the NELS:88/94 and NPSAS:93 surveys, this assumption is incorrect. A better approximation of their standard errors is to multiply each standard error by the average design effect of the independent variable (DEFT),[54] where the DEFT is the ratio of the true standard error to the standard error computed under the assumption of simple random sampling. It is calculated by the DAS and produced with the correlation matrix.

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[53] Although the DAS simplifies the process of making regression models, it also limits the range of models. Analysts who wish to use other than pairwise treatment of missing values or to estimate probit/logit models (which are the most appropriate for models with categorical dependent variables) can apply for a restricted data license from NCES. See John H. D. Aldrich and Forrest D. Nelson, 1984. *Linear Probability, Logit and Probit Models* (Quantitative Applications in the Social Sciences, Vol. 45) Beverly Hills, CA: Sage University Press.

[54] The adjustment procedure and its limitations are described in C.J. Skinner, D. Holt, and T.M.F. Smith, eds., *Analysis of Complex Surveys* (New York: John Wiley & Sons, 1989).

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